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FROM THE READER

All communications to the editorial offices should be addressed to Air Trails, 304 E. 45th St., New York 17, N. Y.

To Get AT Annual by Mail . . . You did a swell job on the 1951 Annual. Just a suggestion: Why don't you grant regular subscribers the privilege of obtaining a copy by mail! I had quite a task obtaining mine, as I did not want to miss it.

Wallace Bishop, West Haven, Conn.

• We have news for you, Wallace. The 1952 Air Trails Model Annual, which goes on sale early in February on newsstands and in hobby shops, may be obtained by mail by sending in the regular price of 50¢ (60¢ if you live in Canada, $1 if elsewhere in the world) to Air Trails, 304 East 45th St., New York 17, N. Y. This means anyone, whether a subscriber or not. Those sending in the price along with their name and address (please print) before the sale date will have copies reserved for them and then mailed at publication time.

Correction on Long Midget . . . Your article with photographs titled "Speed Merchants" was very interesting. However, I do believe that false credit should not be given for promotional reasons. The complete plans, jigs, and templates and manufacturing rights of the Long Midget are owned by me, and we are willing to build Midgets upon order. Also, to the best of my knowledge, Curtis Pitts built #9, which is owned by Luther Johnson.

F. A. Torrey, M.D., Plano, Ill.

"Will It Fly?"... A friend of mine and I have spent the evening discussing model building and looking through current issues of Air Trails. The general sort of model that seems to be selling, as advertised in your pages, and flying, as presented in your articles, is a far cry from the Good Olde Days when Bill Barnes and his Lancer appeared in every issue of AT, Carl Goldberg was winning rubber-power contests with a gasoline-motor model, and the twin pusher was still a reality.

We have managed, without, I may add, much difficulty, to resist the Pre-Fabricated Build-It-In-Ten-Minutes swing-on-a-string "contemporary school." We are still in the dark ages; *i.e.*, we enjoy building detailed solid scale models of ships from the First World War and the period of fifteen years afterward, with an occasional venture into original design sport free-flight and gliders. Our question is this: are we members of a vanishing race; breathes there a soul who still thinks model building should combine art and science instead of demanding an ability to bolt a motor to a few pieces of assorted hardwood and swing it on a wire? What happened to the hardy souls who used to labor bending bamboo wingtips over a candle-flame? Have they all been won over to monkey-on-a-stick modernism? Doesn't anyone ask any more, "Will it fly?" rather than "How fast will it go?"

Sound the tocsin; raise the drawbridge; to arms! If there remain a few fellow sufferers who remember the days of 1/20" sheet balsa and Ambroid let them be heard, let them join us in our plea for a return to model-aircraft sanity, for learning the hobby the hard and only way, for liberation from the Frankenstein's Monster of Just Assemble and Fly! *O tempora!*

R. B. Childs, Department of English, Stanford University, California

For the Flying Pencil? . . . Recently my brother, Peter (age 11) bought a model plane engine and took it to school to show his friends. It caused quite a sensation, of course. But I thought the reaction of one of the girls might interest you . . . she thought the engine was a pencil sharpener!

David Bredemeier, East Aurora, N. Y.

Ford Trimotors Still Active . . . As a constant reader of your magazine I wish to correct you on one thing. This being where you state and I quote: "That the Northrop C-125 Raider as being the only three- (3) engined aircraft in the USA. Raider was designed for small-field operations to act as a cargo and rescue plane. It is basically an assault transport and is slated for Arctic service." The reason that I do this is because we have at the "Johnson Flying Service" one if not two or three old Ford Trimotors, which are still in service for the Forest Service in and around Missoula and vicinity. These planes are used to carry "Smoke Jumpers" and their supplies to forest fires very effectively in this brand of fire fighting.

Terry Evans, Missoula, Mont.

Internats Mystery Stunter . . . I notice with interest that, through Dope Can, Philip Paul of Buenos Aires is trying to locate the builder of a particular stunt model which was present at the '49 Internats.

The model he described is, I believe, one that I shall never forget. It was, as Phil said, something over five feet, and resembled a Madman. It was orange with black trim and had a screaming Orwick up front.

We watched the owner practice the day before the event, and never have I seen such flying. The ship would "coast" through two-thirds of a "clover" after the engine died—and then it would glide a couple of laps before landing! (Without whipping, that is!)

We were so impressed with the flying that we became acquainted with the owner. We even helped him put it back together after his first official had ended in a crack-up. He admitted that he liked to fly for the spectators, and that his low pull-outs were his downfall. He had been coming out of his maneuvers in the grass right along, but on one of his final maneuvers he dug his wheels in a bit too hard, and the great speed of the ship ripped out the gear, along with a good portion of the fuselage.

(*Continued on page* 8)

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are most of the new items. Sometimes there isn't time or space to include them. But, if available, we have it.

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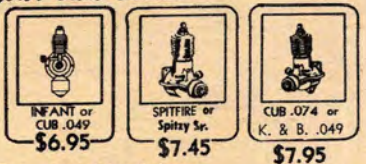
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5-N3

Letters

(*Continued from page 4*)

In the '50 Internats we met again briefly. He had a different design and didn't appear too enthusiastic over it. Unless my memory has conked out good, he placed second in Sr. Stunt. His name is Duane Varmer. I do not have his address, but, knowing the name, the address should be easy to find.

Probably by this time you have Umpty-nine letters with name and address of Duane, but I had to write as I felt a touch of nostalgia when I read Phil's letter.

Stan Davis, Augusta Flying Maniacs, Augusta, Me.

Speak Up, Marv Fromm! . . . Some time ago I wrote to a pen-friend of mine called Marvin Fromm. No doubt you have heard of him, or his brother Wally Fromm who wrote an article in your May 1951 issue. Well, Marv lived in Chicago, then he moved to Arkansas, Fayetteville, it was called, then back to Chicago, 5391 S. Campbell (?) No. Ave. or Dr. This was where I lost him. His next letter was from 9203 S. 52nd Ave., Oaklawn, Illinois, but my letters are just returned to me.

I ask of you to try and contact him for me, or have Wally give me his address. Should you manage to contact him, will you please tell him to print his address in BLOCK CAPITALS as his writing is not too good.

Allan Nichol, 13 Bannatyne Ave., Glasgow E. 1, Scotland

Attention, Collector! . . . I've read Air Trails since the old days of Bill Barnes and am still reading it thoroughly each month. During that time I have noticed that your readers are to be found round the world. For that reason I'm writing to ask if you can print a request for correspondence. You see, I've been collecting pictures of aircraft of all types, modifications, all nationalities and aircraft for all purposes, military and civilian, for twenty years. To date I have over 6,500 different types and modifications and I consider it quite a good collection though nowhere a complete one.

Many of the pictures have been clipped from Air Trails. Other aircraft magazines from the U. S., Canada, England etc. have been my sources also. Now, I would like to contact anyone in any country who is similarly interested for the purpose of exchanging pictures and information on any aircraft from the original Wright biplane to the latest models and their modifications.

Incidentally, your monthly feature "Air Progress" by Douglas Rolfe is one of my favorites because I have got some of the rarer types from it.

Fred Wright, 2569 East 46th Ave., Vancouver 16, Canada

Rhone Radial Fireworks . . . In your column I read about a person asking for info on the Rhone Radial engine, the engine where the cylinders revolve with the props.

I thought you might be interested in an experience I had with such an engine. While visiting a junk shop I noticed this engine and bought it for $40. A friend of mine, a flyer for England in WW1 who used to fly a plane with such an engine was interested in my "find," so I gave it to him. He is engine instructor at Newburgh free academy at Newburgh, N. Y. He mounted the engine on girders set in a concrete floor, cleaned up the engine, which was complete, except for the carb, put on a car brake drum in place of the prop and started it up.

He started it by winding a rope around the brake drum and having about four boys take hold of one end and run down the shop with it, turning over the engine. Before starting he would squirt a mixture of gas and oil in each cylinder through the exhaust valve, which opened up on top of each cylinder, and then holding a piece of waste saturated in gasoline at the intake end of the hollow crankshaft, where the carb was supposed to be. The magneto is connected to the plug by a bare wire running up each cylinder from a slip ring around the crankcase.

To watch this engine run certainly is a sight to behold. He usually runs it at night, turns out the shop lights and watches the fireworks display.

Since the exhaust valve opens at the top of the cylinders without any exhaust pipes, the flames coming from the exhaust valves make a continuous ring of fire around the engine. Also the high-tension sparks going up the bare wires sparkle like a 4th of July sparkler and of course the noise is terrific, but most of all is the sight of a 9 cylinder radial engine turning over 1200—cylinders and all.

This engine is still in running condition and the instructor is always willing to start it up providing you will grab the rope and run down the shop.

George McGinnis, Goshen, N. Y.

U.S. Model Pals Wanted . . . I would like to contact an American modeller with interests similar to my own, and I would be very much obliged if you could put me in touch with someone. I am nearly 18 years of age, and I am interested in control-line speed and team racing.

Come in, America!

Eric Bayfield, 52, The Oval, Smithwick 41, Staffordshire, England

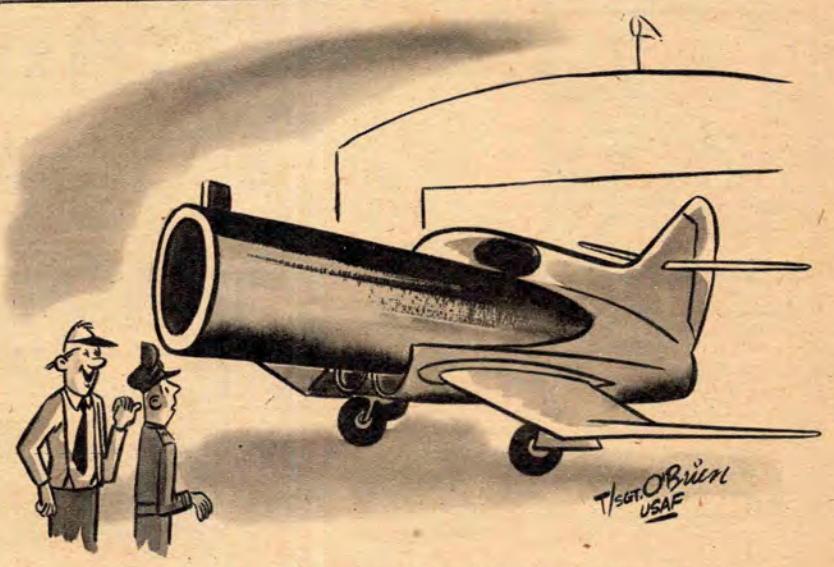
. . . I have just received this month's Air Trails from a cousin of mine in Toronto and I decided I'd write at once and let you know how pleased I am at your magazine. I got a great kick from the advert's. There is more to one page than to one of our whole books.

I see you have several letters in your "Readers Write" column from chaps here in England, and wondered if you could shove in a couple of lines from me asking your American readers who might be interested in swapping ideas, plans, engines, books and mags, etc. to write to me. I don't belong to any club, but every Sunday myself and about fifteen or so other guys have an informal meet at a pasture up the road from here.

I would like to correspond with an American modeller (any age) who is gone on control line.

Thanks for a grand magazine. I guess I like it so much because there is nothing of the "stuffed shirt" about it.

Frederick Bell, 20 Darncombe St., Moss Side, Manchester 16, England



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R/C

Around the modelplane radio-control circuit . . . comment and reports by a leading authority

Clubs and Individuals. We have a big backlog of news so let's dig right into it. First, here are some R/C groups who are looking for new members:

El Paso, Texas. R/C activity high with 10 "converted" free flighters busy on planes. No formal R/C club yet, but there probably will be. Contact E. L. Safford, Jr., 3215 Aurora St.

Corpus Christi. Jim Holman, 1004 Collins Ave., is looking for flyers interested in R/C.

Williamsville, N. Y. Harold deBolt writes of the great upsurge of R/C interest in his area. He and other Buffalo flyers had held R/C in awe, until one of their friends brought home an R/C kit, assembled it, and flew. As this fellow, Tom Parry, was no radio technician, this opened a few eyes. Most of the flyers know little of radio, but *are* interested in model design problems. They are evolving some new ships, one of which is shown here. It spans 64", area is 720 sq. in., and weight 3½ lbs. Power is a McCoy Sportsman .19. Construction, sheet balsa, with silk covering on fuselage, Silkspan on wing. Citizenship R/C equipment.

A similar ship flown by George Swank took first at the Canadian Nationals; deBolt was second, and a Detroit flyer third. Not bad, considering it was the first R/C contest for both Swank and deBolt!

Marietta, Ga. Tri-City R/C Club flies near Lockheed plant. Will stage 2-day R/C Meet in June and wants prospective contestants to sign up now. Write L. R. Purdy, Rt. 1, Smyrna, Ga.

Atlanta Radio Controlers (Georgia) fly near Fulton Co. Airport. Welcome beginners and experts. Reach them through Forrest Cole, 4141 Sequoiah Rd., Brookhaven, Ga. Forrest has a Ham uncle (Harry Cole, W4EEB) and would like to see names of more Hams in this column. Send call letters and frequency you work. We'll print 'em here—let's start a country-wide on-the-air R/C Forum!

Long and welcome letter from Ginnie Freese—official scribe for the Chicagoland R/C Modelers since hubby Clay and son Chet are too busy modeling to write—tells of doings out their way. They had a big 2-day weekend of informal flying during a visit from Joyce and Walt Good. Walt showed the group how to disperse those folks who always crowd around, sitting on transmitters, grabbing antennas, etc. Seems all you need is a ship trimmed to fly at top speed about 8-10 feet off the ground—and a guy who can handle it. Then wind 'er up and watch the uninitiated disperse!

DeBolt's 64 inch span R/C job. Construction is completely sheet balsa à la control line. Silk covers fuselage, heavy Silkspan on the wing. Weight is 3.5 lbs. Aero Gloss finish.

H. A. Thomas, a recent convert to R/C, is getting hot on new R/C ship designs; had a neat job with Ruddervator at Nats but didn't get a chance to fly. Tells us he is designing an ultra-simple plane. Arkansas R/C modelers should look H. A. up at Union Life Bldg., Little Rock.

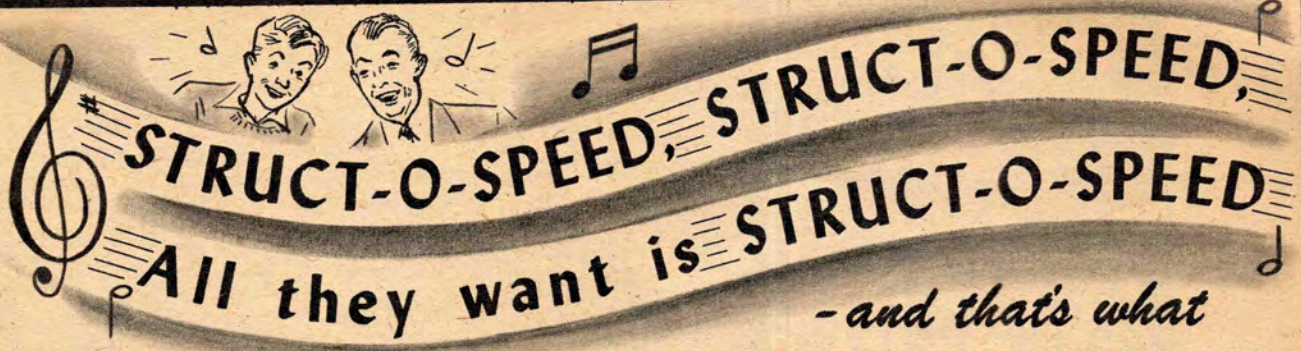
Youngstown, Ohio. Certain members of the Mahoning Model Club have been holding informal R/C bull sessions after every regular club meeting. They finally decided there was too much talk, not enough action. Three of them went to work on a Rudderbug with Citizenship equipment. Completion of this plane started another group on a McElwee Robot and still more ships are now under way. It is planned to consolidate all the R/C enthusiasts in a new organization. Those interested should write to Frank Pavliga, c/o Mahoning Model Club, 2700 Market St.

Brayton Paul of Baltimore flies semi-scale low-wing 48-inch-span job on a Cub .09. Rudder is moved by a small motor through a friction clutch. Ship weighs almost 2 lbs.

Birmingham, Ala. A group in this city is looking for more flyers to join them. So far, they have used home-made equipment entirely, fitted in Rudderbugs, semi-scale bipes, etc. Write or call Milton Whitley, 905 S. 40th St.

Baltimore, Md. Brayton Paul, 6022 Alta Ave., has been flying the low wing model pictured here, with fine results. It has a 4' span, 7" chord and Cub .09 power; has a nice steady climb even though the plane weighs almost 2 lbs. Rudder is moved by a small motor through a friction clutch. There is growing R/C activity around Baltimore; in fact, the Aero Craftsmen Club held an R/C meet during the fall, won by Vernon Chapin. An R/C "only" club is to be started early in '52; contact Brayton for particulars.

It seems to be no secret that rumors have the '52 Nats slated for Santa Ana, Calif. This is just a rumor—repeat, *rumor*—but R/Cers better prepare well, for those California boys are really practicing up for you! (*Continued on page 57*)



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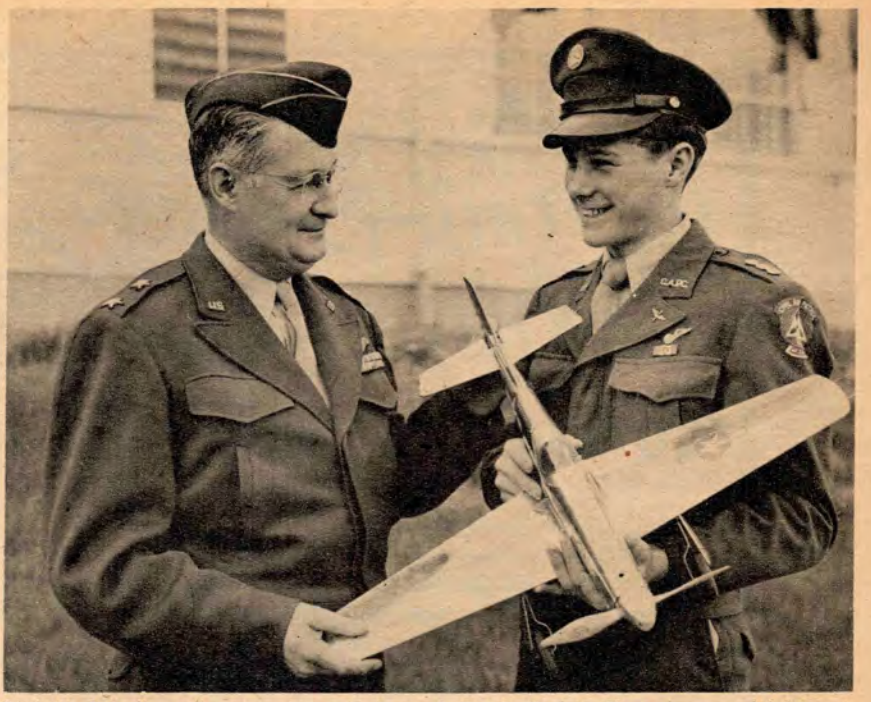

Civil Air Patrol's nat'l comm., Lucas V. Beau, & C.A.P. Cadet officer share model interest.

The C.A.P. Cadet

■ 'Teen agers who join the CAP Cadet program at once may be considered for a two-week encampment this summer. Those who delay may be too late. At fields in each region, selected boys and girls again will get a thrilling sample of military life, usually including airplane rides. The annual Cadet exchange with foreign nations also will be conducted on a larger scale than ever before.

For aeromodelers, there is much to be learned in countries where modeling is encouraged as part of air training. The records held abroad are a tip-off on what might be gained from studying foreign methods.

Air Trails expects reports on this from Cadets who go.

Adult Supervision of the CAP Cadet program is going more and more into the hands of CAP officers with this special duty while the rest of the Senior members work more on CAP's other missions, such as search and radio. The trend is toward something more like the Canadian system where each Squadron of Cadets is conducted by RCAF Reserve Officers. Some authorities would put CAP on that basis.

Teamwork of Reservists with specially qualified civilian instructor personnel, competent to run a youth program, may be the answer. Reservists are urged by the Air Force to act as CAPC instructors. The more these veteran flyers come in, the more practical the Cadet training will be for future airmen.

Aeromodeling by teachers is part of the workshop program planned by Dr. Mervin K. Strickler, CAP educationist, to bring aviation training into the schools. Based on his test in Puerto Rico last year and on wide consultation with school-men, Dr. Strickler has been completing material for use wherever high schools can be interested.

Colonel Elliott White Springs, noted textile manufacturer, author, World War I aviator, has been appointed a member of CAP's 9-man National Executive Board. He has served as commander of the South Carolina Wing of CAP. Gen. Carl A. Spaatz, former Air Force chief, is chairman of the Board.

Search and Rescue missions are reported in many areas. Largest practice maneuver in recent months put 1,000 planes from Eastern States in the air on CAP's 10th birthday.

CAP's radio network is scheduled for expansion from 9,000 stations to 30,000 within the next four years. The parallel Military Amateur Radio System, sponsored by Air Force and Army, also is being developed for emergency. *Here's a chance to learn radio techniques which may apply to radio-controlled models.* CAP has a great deal of radio equipment together with special frequencies and veteran radiomen to teach newcomers.

Join the Civil Air Patrol—the civilian auxiliary of the U. S. Air Force. Cadets are 14½ to 17; Senior members 18 and over.

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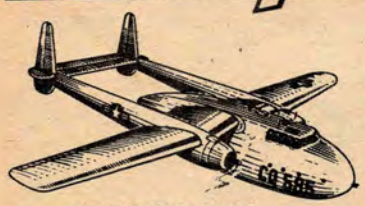
HERE'S 4 BRAND NEW MODELS - EACH A HONEY!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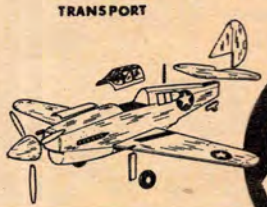

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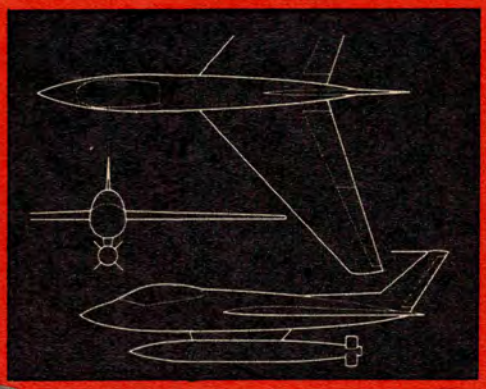
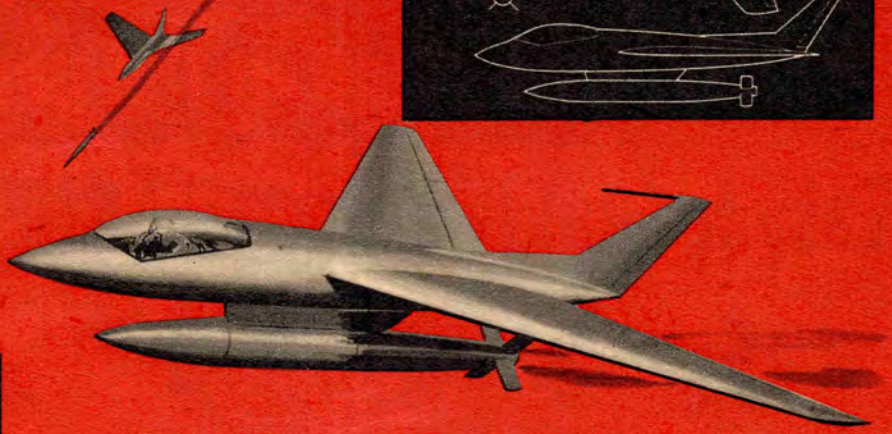
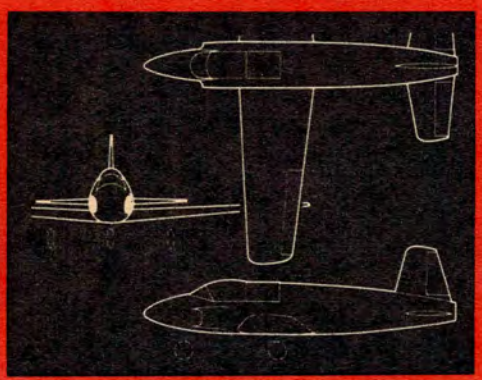
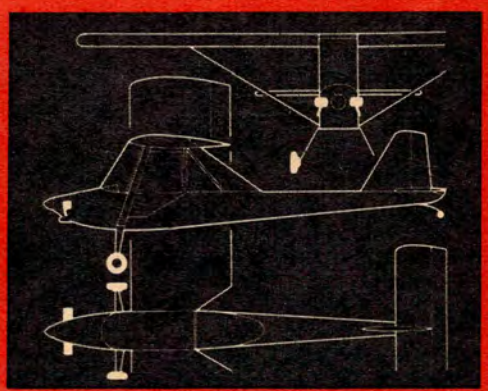


This month's best. Defense Interceptor by Pfc. Richard Locher of Kelly AFB, Texas. Plane is catapulted from ramp using Jato cart. Motive power in flight supplied by the rocket attached below. Part of fuel is carried in plane. When enemy is intercepted the rocket is launched, plane itself returning to base as glider. Craft is actually alarm fighter, can be launched at steep angle; chiefly protects own base.





Two-place jet trainer by Jan Thylen of Norrkoeping, Sweden. Is powered by a fairly small turbo-jet developing only 2500 lbs. of thrust. Its purpose is to familiarize pilots with operation of jet aircraft. General shape similar to British fighters. A good simple straightforward design. Span is 31 feet, length 25 feet.



Low-cost, single-place lightplane by Walter Winberg of Chatham, Canada. Symmetrical wing panels are interchangeable. Externally ribbed wing skin is riveted to aluminum skin; stabilizer is of same construction. Fuselage forward of trailing edge is metal clad, remainder, fabric covered. Wingspan 25 feet, length 16 feet; gross weight 500 lbs. A 35 hp engine; top speed 95 mph, landing speed 35 mph. Landing gear Cessna type. Especially notable is fine visbility.

Air Trails has opened its columns to those who are interested in presenting plans for "aircraft of the future." Rules governing the competition are as follows: Three-view sketches of the proposed aircraft will be required. These should be not less than 8½ x 11 inches for the entire three-views. Give sketches of the complete airplane in three-quarter front and rear positions. Photos of a model of proposed design may be included. Information on power plant(s), estimated performance, dimensions, and explanations of any unusual features are required. Data as to age, occupation or schooling of the entrant will be welcomed by the editors and judges. The designs may be of any type: commercial aircraft, military planes (fighters, bombers, troop transports), planes for the private flyer and single-engine sporting or racing craft. The entry each month judged the most practical or of the greatest significance will receive an award of $25. Payments of $5 will go to the runners-up. Entries will not be returned and for that reason those participating should keep copies of all material submitted. Mail entries to Airmen of Vision, c/o Air Trails, 304 E. 45th St., New York 17, N. Y. Editors regret that because of large number of entries they cannot enter into correspondence on A. of V.

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Jersey City, New Jersey. 15:31.4

PAA Load Class AB,
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Michael Cook
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PAA Load Class AB,
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air notes | AVIATION TODAY AND TOMORROW

F9F-6, swept-back-wing Grumman Panther made initial test flight. . . . FOR DEVELOPMENT AND USE of rotary wing aircraft, the helicopter industry, military services, and Coast Guard were awarded Collier Trophy. . . . TWELVE Vickers Armstrong "Viscount" turbo-prop airliners ordered by Air France from British concern. . . . SUBSTANTIAL NUMBER of Douglas Skyraiders will be delivered to British Royal Navy under Mutual Defense Aid Program.

●

FIVE Lockheed Constellations being modified for BOAC (British Overseas Airways Corp.) by Lockheed to accommodate 68 passengers each for tourist class travel. . . . BRITISH CIVIL gas turbine airliners, both jet and turbo-prop, lead world in flying hours at last count: 2800 hours for Great Britain, 280 hours for Canada, 25 hours for France, and only 15 hours for USA. . . . JAMES V. RYAN, who has a number of "firsts" in helicopters (first pilot to loop one, first pilot to bail out of one) has joined Gyrodyne Company of America as chief test pilot—previously he held similar position with Piasecki Helicopter Corp. . . . TWA has cut fares on Constellation Skycoach service between New York and California to $99.

●

PRATT & WHITNEY has been awarded contract by Air Force to build atomic aircraft engine. . . . WELLWOOD E. BEALL, Vice President of Boeing Airplane Co., elected president of Institute of the Aeronautical Sciences. . . . MILITARY VERSION of Lockheed Super-Constellation, Air Force C-121C, Navy R70-1, will carry 106 troops or 73 litters. . . . SMALL, AUTOMATIC radar which takes guesswork out of aiming and shooting being manufactured in quantity by General Electric Co., for jet fighters. Device is so accurate inexperienced pilots constantly down towed targets with their first bursts during aerial gunnery practice.

●

VOUGHT F7U-3, more powerful and heavier armed version of Navy F7U-1 Cutlass, made test flight at Hensley Field, Dallas, Texas. . . . SABENA, Belgian airline, has been operating helicopters for a year. Two Bell 47D's have handled 4,630,000 letters; they operate 6 days a week.

●

SEABOARD & WESTERN AIRLINES, large international freight carrier, ordered five all-freight versions of Lockheed Super Constellation. . . . BOEING C-97 Stratofreighter successfully tested by Air Force as paradrop cargo carrier. Items dropped included everything from howitzers to helicopters.

●

TWENTY new types of aircraft made first flights in 1951 in Great Britain. Twelve of 20 were intended for armed services, six for research, two for civilian market. . . . RED BOMBERS seen on Korean front were propeller-driven Tu-2's of World War II vintage. . . . HILLER HELICOPTERS producing in quantity H-23B model for military services. 'Copter is improved version of former H-23 which saw extensive service in Korea. Among improvements are a more powerful engine, developing 200 hp, skid landing gear for better ground stability and landing on rough terrain, and improved litter installation.

●

KOREAN K.O.: B-29 of 19th Bomb Wing named "Dragon Lady" has five enemy jet fighters to its credit. . . . PRATT & WHITNEY T-34 turbo-Wasp engines to be installed on two Navy R70-1 Super Constellations. These powerful turbo-prop engines rated at 5500 hp each will give plane a cruising speed of 394 mph. . . . CAA advocates use of angle of attack indicator for lightplanes to prevent stalls and serve as continuous indicator of the plane's attitude to facilitate trimming for economical and efficient flight.

●

SWEPT BACK WINGS are latest fashion in aircraft. Next to wear the modish configuration will be Douglas F3D Skynight. . . . TANK BOMBINGS: British have new method of eliminating gas tank explosions resulting from bullet hits. Small gas bomb inside tank is set off by build-up of pressure from explosion. Bomb liberates suppressive gas which snuffs out explosion.

●

FAI (International Federation of Aeronautics) awarded Lilienthal Medal for year's best achievement in motorless flight to William Ivans of San Diego, Calif. Ivans reached an altitude of 42,000 ft. in his sailplane at Bishop, Calif., on January 1, 1951. . . . AIR COORDINATON COMMITTEE allowed an increase of personal plane production to 3500 per year instead of former 2500. Role lightplanes played in floods of past months was one of the reasons for granting increase. . . . PERSONAL TYPE aircraft of U.S. registry visiting a foreign country for six months or less must file a declaration of temporary sojourn with the U.S. Collector of Customs at the place of departure. . . . EXHAUST MUFFLER for DC-3 which reduces noise on take-off by some 60% has been perfected and successfully tested by the Aero-Sonic Corp. of Brooklyn, N. Y.

●

QUESTIONS AND ANSWERS for Private Pilots, booklet containing 200 questions and answers based on written examinations given by CAA now available for 15c from U. S. Government Printing Office, Washington, D. C. Exams on questions taken directly from booklet.

●

RUSSIAN AIR FORCE in East Germany said to consist of numerous Mig-15s, Il-10s, unidentified twin-jet bombers & lend-lease B-25 Mitchells.

Canton's Kemp

AIR ADVENTURERS CLUB

Quincy Dick

Dodger Pal

Utah Jim

■ Say, Air Adventurers, not all of you are returning a photograph with your "membership data sheet" as requested by headquarters. If we don't have a picture, how can we let your fellow club members know what you look like and what your hobbies may be?

So much for that. Here are some AA'ers we'd like you to meet. First is Donald R. Kemp of 3105 Martindale Rd., N.E., Canton, Ohio. Don's 16 and in the 10th grade. He has airplane plans to trade. That Piper Cub before which he's standing belongs to his uncle. And the picture was taken the day he got his first airplane ride! Don wants to be a pilot when he grows up. Right now he builds model planes, trains and boats.

Richard Weisse of Quincy, Mass. (73 Stedman St.) is the same age as Don, in the same grade, and just like Don wants to be a pilot. Dick is shown with a portion of his fine collection of models and airplane photos. He's a lens-hound and enjoys taking photos of airplanes which he'll swap with interested fellow Adventurers.

Representative of our older members is Salvatore Mitrano, 305 President St., Brooklyn 31, N. Y. Sal's in the jewelry business and is 23. He's a real model plane fan and the photo shows him holding a fine Phantom Fury rubber model with a wing area—we'd guess—of about 125 sq. inches. AA'er Mitrano invites correspondence.

Way out in Layton, Utah, lives the next member we'd like you to meet: James R. Higgs who can be reached at RFD No. 2, Box 1. (We give you these addresses in case you'd like to write.) Jim is 16 and in 11th grade. As you might well expect, since he lives in the cattle country, Jim lists his hobbies as "raising livestock" as well as "building and flying model airplanes." That's a speedy-looking U-Control model he's holding which he probably uses in conjunction with his Air Scout work. Jim hopes for a lifetime career in aviation.

AGE LIMITS: There are no minimum or maximum age limitations on Air Adventurers Club membership

MAIL TO: Air Adventurers, c/o Air Trails, 304 East 45th Street, New York 17, N. Y. Print all information required on the application; sign where indicated.

I hereby apply for membership in the Air Adventurers Club and promise to do everything in my power to uphold the principles of the organization and work for the advancement of American aviation. I enclose 25¢ in well wrapped coins for my credentials ☐; 50¢ for credentials *and pin* ☐—(indicate which).

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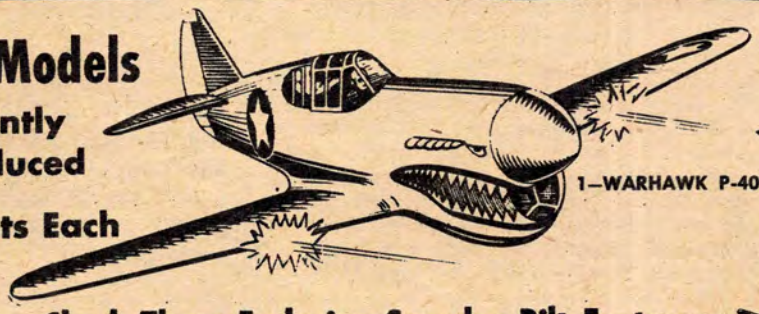
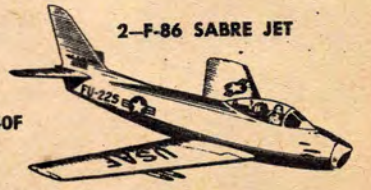


1—WARHAWK P-40F



2—F-86 SABRE JET

3—CORSAIR F4U-5

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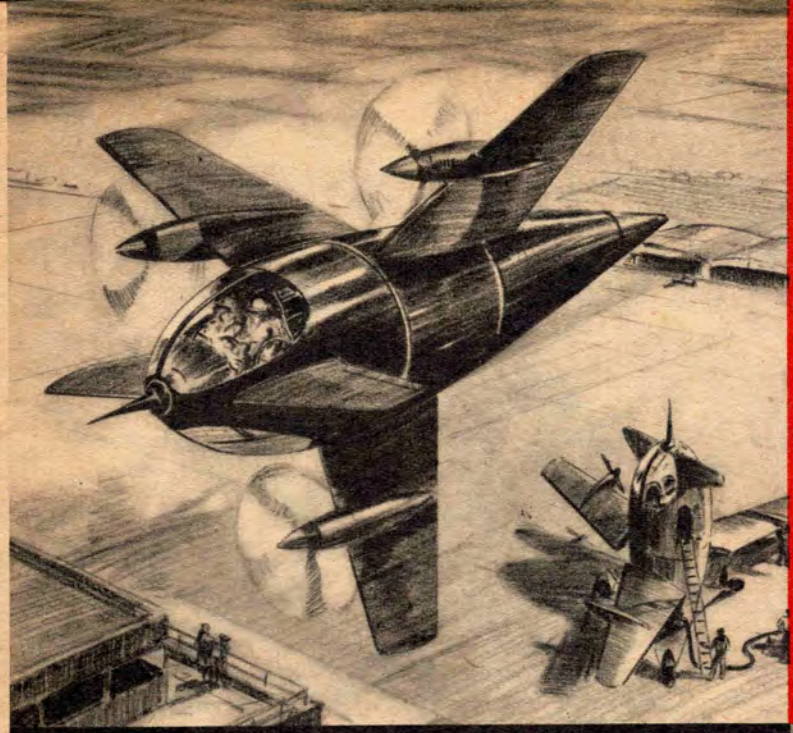
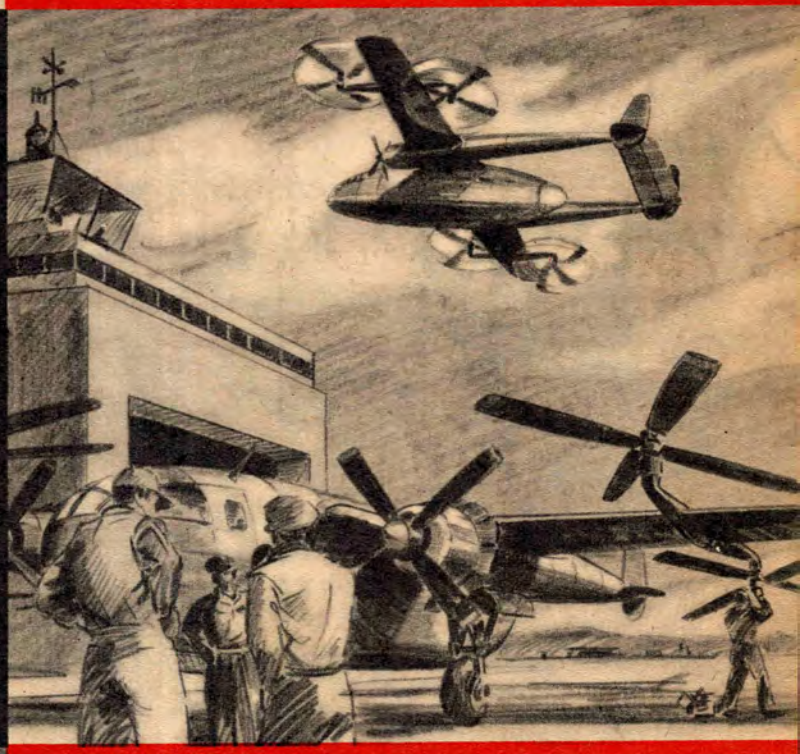


Convertaplane, a blend of helicopter and airplane, when fully developed will give us aircraft with ideal flight characteristics

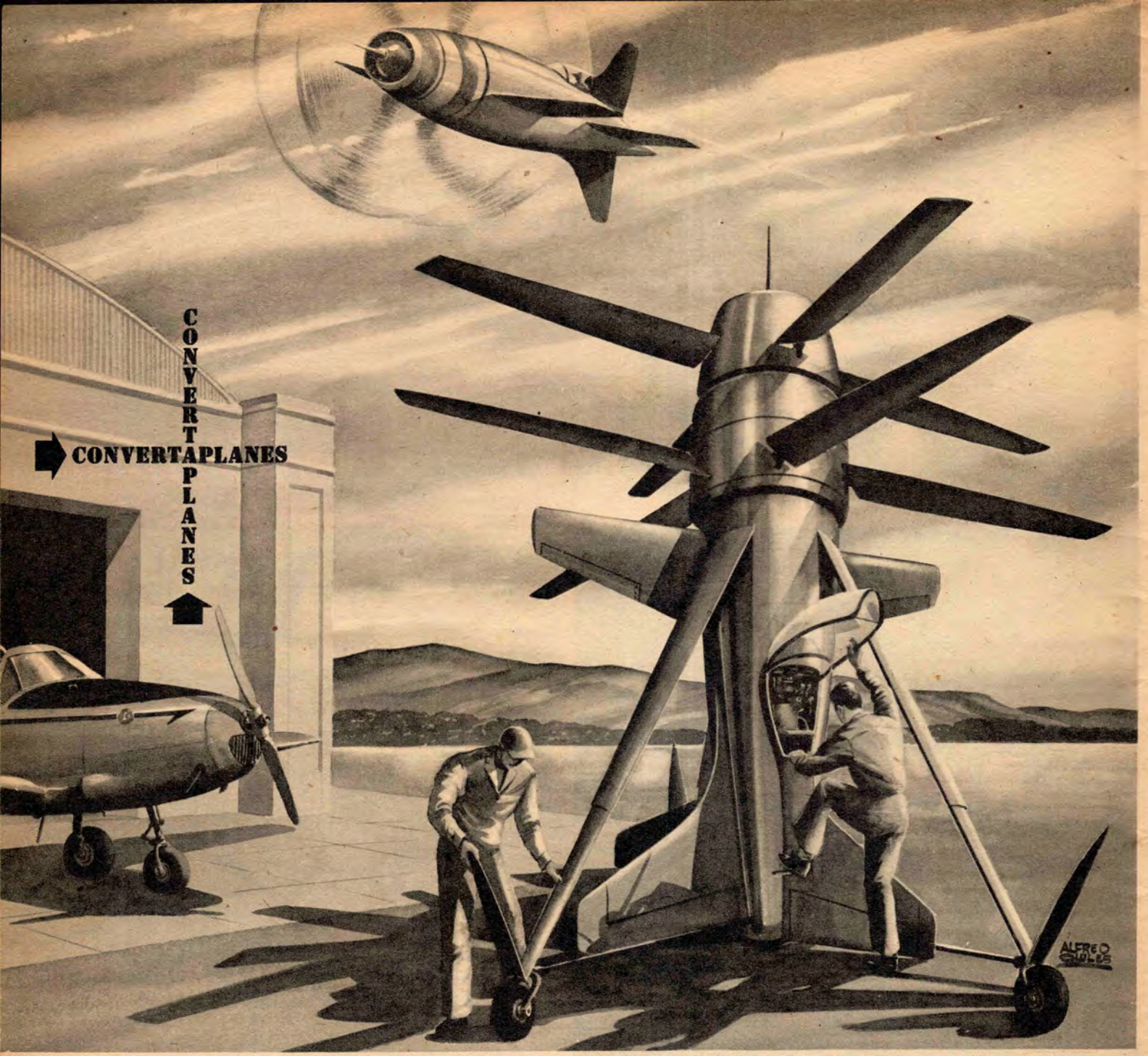
Three-bladed "stop rotor" design (left). On the ground fuselage is vertical. While rotors are in horizontal plane, rotation is by means of propellers on leading edges. After craft has risen vertically, fuselage assumes horizontal position, rotors are feathered to function as wings, while propellers furnish forward thrust. Jet engines can "sub" for propellers.

CONVERTAPLANES

CONVERTAPLANES



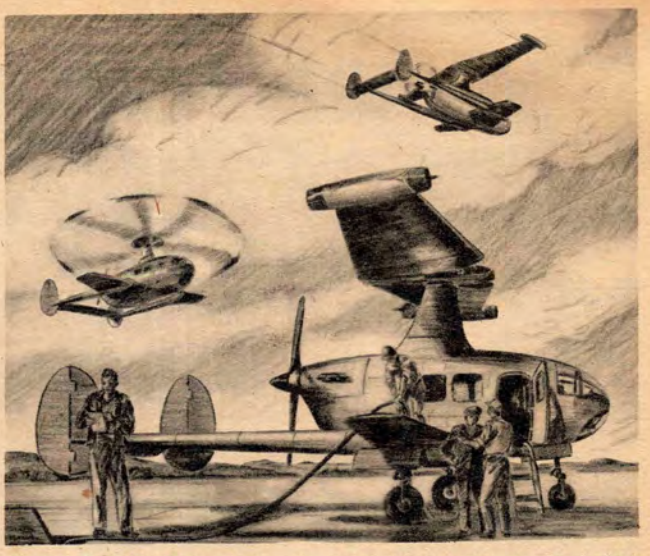
Flettner convertaplane (above) is conventional type aircraft with addition of lifting rotors located ahead of leading edge and behind trailing edge of wing, to overcome downwash interference of fixed-wing rotors. In level flight each rotor can be turned parallel to flight direction, offering least drag. Left: This type is already in experimental stage. In U.S.A. by Gyrodyne Co. of America; by Fairey Aviation in England. Known as "unloaded rotor" design, blades are power driven during take-off, landing and hovering flight, free wheel in cruising flight.



Tilting fuselage convertaplane with tractor rotors acting as propellers when craft is in horizontal flight. This is an early concept.

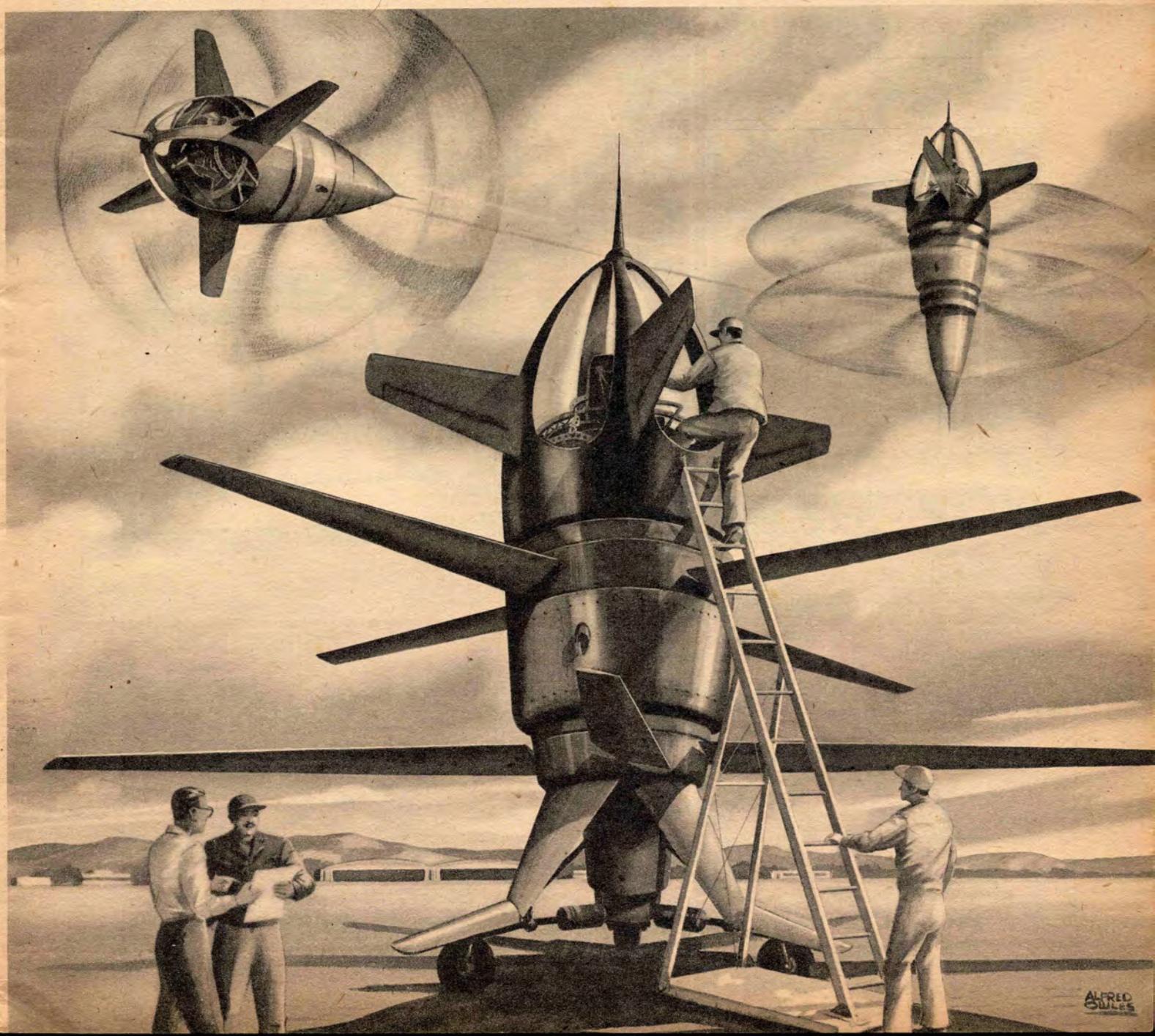
■ The convertaplane, theoretically, is an ideal flying machine since it combines the best features of a helicopter with that of fixed-wing aircraft. It can rise and descend vertically, hover motionless in the air, and yet, unlike the helicopter, possess the high speed and load-carrying capacity of the conventional airplane. It is no wonder, therefore, that the world of aviation has been working overtime to produce a practical convertaplane. These interesting designs were discussed and suggested during the First Convertible Aircraft Congress by leading engineers of vertical lift aircraft. The fact that three major aircraft concerns, Bell, Sikorsky and McDonnell have been granted experimental contracts by the military for development of convertaplanes is a sure indication that a stage well beyond paper doodling has been reached. It will be several years before we see the convertaplane even in small scale operation, and the military will have first call on it, but that is just as well. Military use of helicopters greatly accelerated their practicability and public acceptance. Lawrence D. Bell of Bell Aircraft Corp. has stated, "The helicopter's contribution in Korea has cut ten years off the aviation industry's time schedule for development and recognition of the craft." Los Angeles Airways has been successfully operating helicopters for a couple of years and New York Airways was recently authorized to conduct helicopter operation in New York Area. The convertaplane is slated to follow the same road to success.

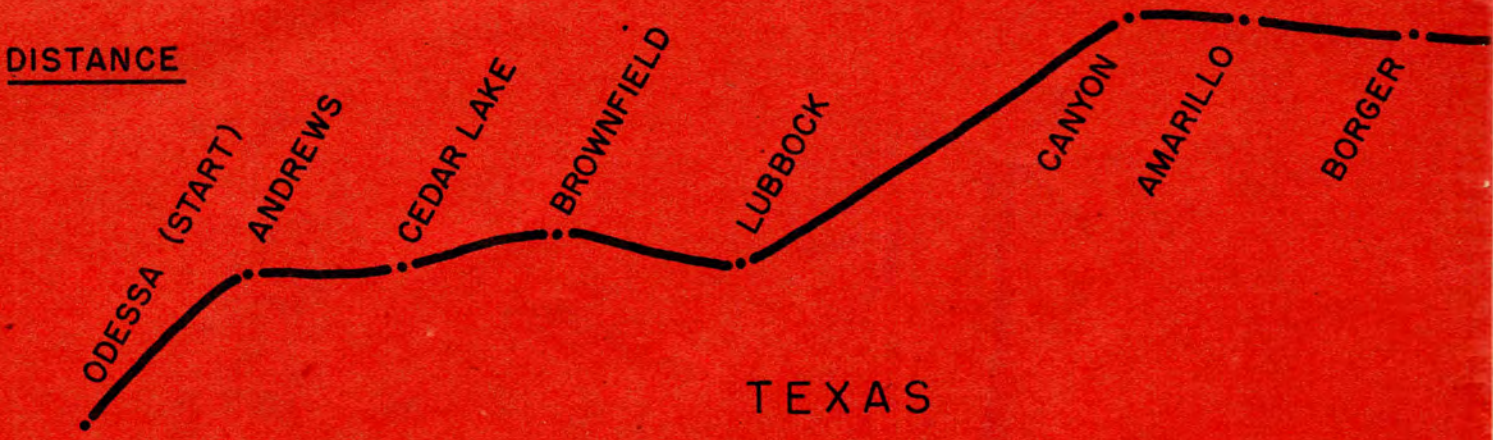
Zimmerman's design development of original craft built by Chance Vought in '46. Flew well as conventional plane, landed in short space.

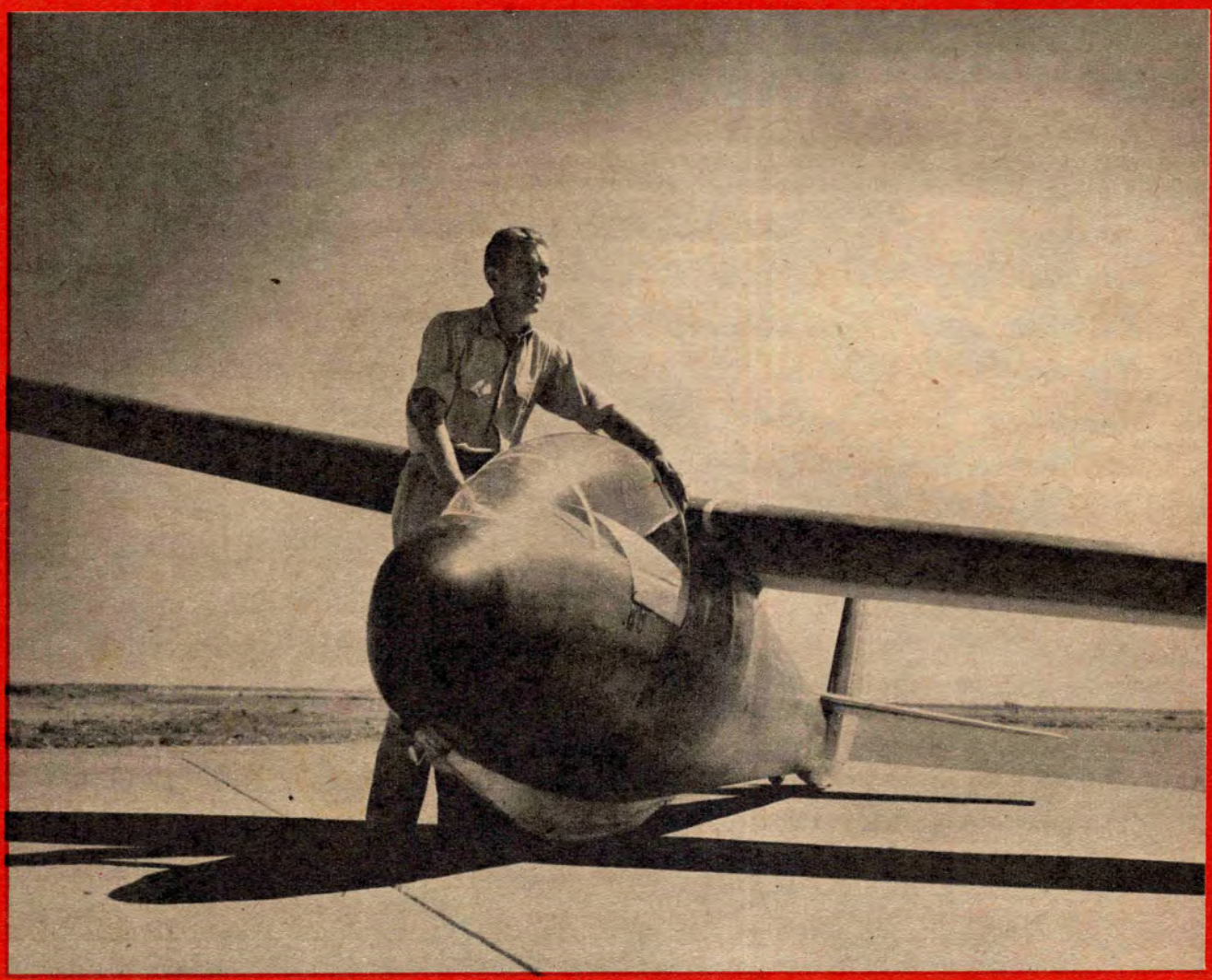


Herrick HC-6D. Top surface acts as jet-driven rotor, can be locked to act as wing. Herrick had similar plane flying 20 years ago.

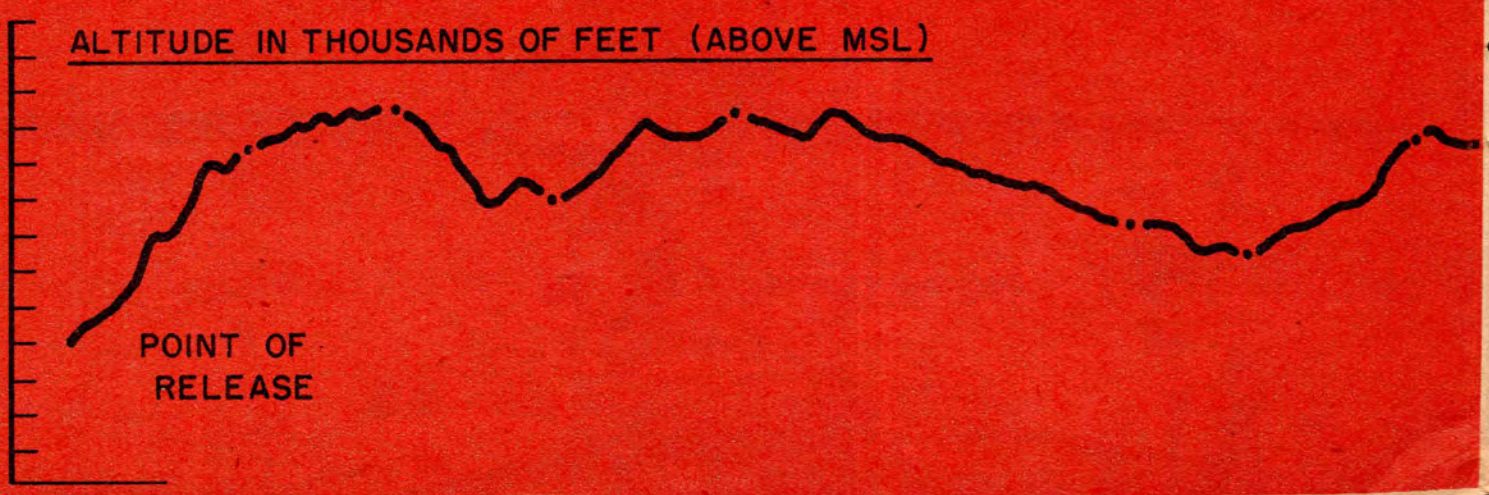
Tilting fuselage convertaplane with mid-fuselage rotor. The placement of the control surfaces above center of gravity increases stability.

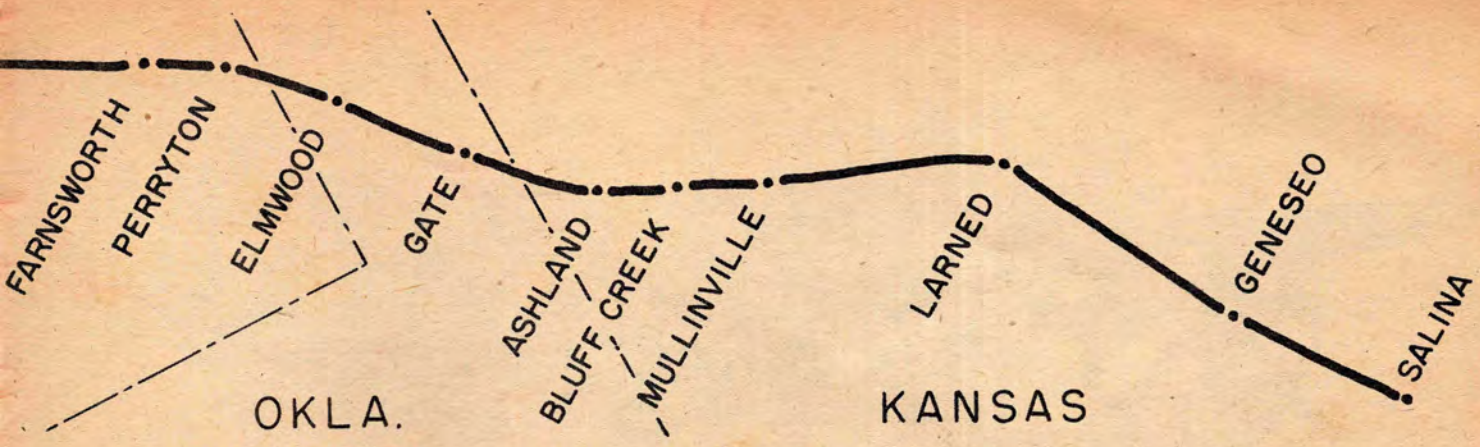






Dick Johnson, twice National Soaring Champion, holder of four national and one international distance records with the RJ-5.





I Thermal Thumbed to Kansas

He flew 545 air miles in a sailplane, breaking world's record held for twelve years by the Russians

■ In August of 1938 a Russian woman, Olga Klepikova, startled the gliding world by making a sailplane flight of 465 miles. This was much greater than our national record of 263 miles and even the Germans had never succeeded in passing the 400-mile mark.

The American national record increased slowly through the years—290, 303, 314 and then 324 miles in 1947. At this rate we probably never would get to the 465 mile mark—at least not before most of us were old men.

It was soon apparent that America needed a new advanced sailplane designed especially for high-speed cross-country cruising, if we were to take a top place in world gliding. With this as our criterion Harland Ross, an outstanding sailplane designer, and I managed to design and build what we thought was such a ship. Ross started the work at Bishop, California, during the summer of '48. In a year and a half he had assembled most of the structure of the aluminum alloy wing and also the basic shell of the monocoque plywood fuselage.

I then took it to Mississippi State College, where I was attending the engineering school. Generously, Dean Flinch of the Engineering School gave me space and facilities so that I could work on it in my spare time. Dr. August Raspet, heading a sailplane research project there, gave me a great deal of help by machining fittings, bucking rivets and so forth.

Somehow our new sailplane, the Ross-Johnson-5, was ready for test flying in July, 1950. It was far from being a completed machine but enough was there for preliminary testing.

Now that we have the ship assembled, let's take a look at it. The wing immediately catches your eye as it is quite different. It is long in span (55 ft.) but quite narrow in chord and highly tapered. The aspect ratio is over 24, giving the wing the appearance of a toothpick when viewed from a distance. High aspect ratio is very essential to a flat gliding angle and we had the highest in the country. The wing is made of 24 ST aluminum. There are two main spars, one at 20% chord and the other at 50%. The wing between these two spars is skin stressed. Between the 50% spar and the leading edge the wing is covered with .032" aluminum sheet. Behind this it is covered with fabric and dope.

Probably the most significant reason for the success of this sailplane is the new laminar flow airfoil section used on the wing. It is the NACA 632-615 airfoil. If these laminar sections are built quite accurately to shape and kept polished and smooth, they have a much lower drag than conventional airfoils.

On the bottom surface of (*Continued on page* 54)

By RICHARD H. JOHNSON

Custer Channel Wing airplane recently demonstrated to press at Pittsburgh, Pa. Taylorcraft Inc. licensed to build military liaison plane based on this principle.

Below: Kaman K-225 turbine powered helicopter, built under Navy contract. Has Boeing 502-2 gas turbine of 175 hp. Entire powerplant weighs less than 250 lbs.

Development Highlights

Gloster GA5, world's first operational twin-jet Delta fighter, for all-weather day and night duty. Two Armstrong Siddeley Sapphires of 7200 lbs. thrust each.

Fletcher armed lightplane. An experimental version. Note racks under wings for bombs or rockets; also armed with .30 cal. m.g.'s in wings. 250 hp engine.

Below: de Havilland Chipmunk, product of de Havilland Co. of Canada. Used by RAF and RCAF for training. This model is powered by 190 hp Lycoming engine.

Auster B4, British ambulance-freighter lightplane. Loading is through rear section of pod-fuselage. Wingspan 37 ft., engine 180 hp Cirrus Bombardier, speed 100 mph.

FAMOUS FIRSTS IN AVIATION

It's no easy matter to pick the most significant planes of all time—but consider Tinsley's Trailblazers!

By FRANK TINSLEY

■ When one considers the thousands of novel and interesting crates that have burdened the progress of aviation's five frenzied decades, the task of picking out the ten most significant is an enormous one. The only way out seems to lie in selecting a series of prototypes, each of which fathered a completely new school of design. By dint of much delving, we come up with the following assortment. Some are familiar, others obscure.

The first milestone on the rocky road of air progress is the final Wright Brothers' glider of 1902. Although many other glider designs antedated it—Lilienthal: 1891; Pilcher: 1895; Chanute and Herring: 1896—catch-as-catch-can layout and rule-of-thumb aerodynamics proved frequently faulty. It was the Wrights who really pioneered the scientific approach to flying. They built and used the first wind tunnel and were the first to evolve the correct principles of airflow and lift. Their culminating glider, a well-engineered biplane of 32 ft. span and 5 ft. chord, was strong, stable and controllable in flight. It established the basic form of aircraft for the succeeding two decades and can truly be called the granddaddy of modern aviation.

Wright glider (1902)

The next great forward step in aircraft design was the elimination of the strut-and-wire "built-in headwind." Generally credited to Tony Fokker, with his "Flying Razor" and later collaboration with Junkers, the internally stressed, monoplane wing was really pioneered by the great French designer, Levasseur. As early as 1911 he came up with a low-wing, cantilever monoplane. His Antoinette of that year boasted a buried 90 hp fuel-injection engine, completely covered fuselage and tandem wheel landing gear enclosed in streamlined spats! It was not until twenty-odd years later that Northrop resurrected the layout with his 700 hp Delta and Gamma models.

Antoinette cantilever (1911)

Our third milestone switches the path of aerial progress off on a tangent. It appeared in 1914 and was the fruit of an international collaboration between the American designer, Burgess, and an original-minded English experimenter named Dunne. Between them, they produced the first practical tailless plane. Built with both wheel and float gear, their V-shaped biplane was completely stable and easy to fly. It sported a rear engine, pusher prop and wingtip floats.

The Burgess-Dunne Tailless was one of the U. S. Navy's earliest service seaplanes. Why it was eventually discarded is one of the murky mysteries of aircraft procurement. It was later followed by a long line of distinguished descendants, among them the Westland-Hill "Pterodactyls," Horten's gliders, Waterman's roadable "Arrowbile," the Northrop series of flying wings and the present English and Canadian models. It was the true progenitor of the tailless flying wing.

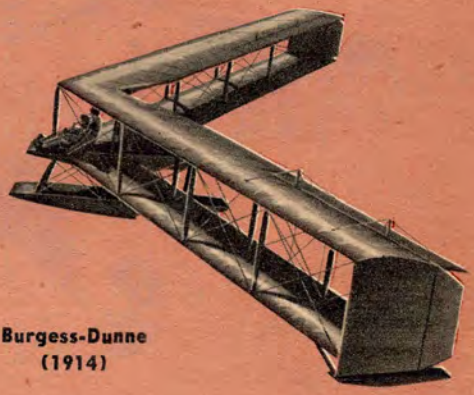
Another and even more radical offshoot was the concept of a brilliant young Spanish designer named Juan de la Cierva. After several crashes, he became disgusted with the poor landing characteristics of his conventional planes, and tackled the apparently insoluble problem of keeping the wing flying fast while the plane to which it was attached, landed slow.

His agile mind hit on the idea of rotating the wings and the autogiro was born. In this machine, the usual fixed lifting surfaces were replaced by a set of narrow, pinwheel-like wings which whirled around a central hub. The "rotor," as it was called, could thus spin at flying speed even while its fuselage hung motionless in the air. Rotor speed was maintained by the natural force of autorotation and the ship propelled independently by a standard engine-driven prop in the nose.

The early designs were not too practical. Endless taxiing was necessary to get the rotors turning at flying speed. Then, Cierva incorporated an auxiliary drive shaft from the engine to start the rotor promptly. One improvement followed another until autorotation was finally abandoned and direct engine-driven rotors substituted. Thus, the whole descendant line of modern helicopters and convertaplanes harks back to Cierva's original whirligig grasshopper.

The next milestone was unveiled when I crawled out of an old, two-passenger "40" at Boeing field early in 1930. Out of the hangar doors was wheeled a gleaming apparition that made my eyes pop. It was the prototype "Monomail," a slender bodied, polished aluminum monoplane that was to spark a new era in air transport. Designed to replace the biplane "40" in the carriage of mail and passengers, the new beauty still clung to the fixed landing gear and open pilot's cockpit. Everything else about it, though, was a dream of modernity and a promise of things to come.

The promise was not long in bearing fruit. From the Monomail sprung the first modern bomber, the YB-9. It was the father of the Boeing 247 twin-



Burgess-Dunne (1914)

Cierva (1923)

engined transport and through it the great granddaddy of all our American low-wing, multi-engine, transport designs. A true trailblazer!

Now we jump to the war years and the birth of postwar aviation. It is August, 1939, on a well-guarded experimental base in Hitler's heartland. Taking the air for the first time is a sleek, strange-appearing, shoulder-wing monoplane. The strangeness comes from its truncated nose which gapes like the open maw of a shark. As the new ship taxies down the runway with a peculiar whining roar, we see that the tail cone has been chopped off, too. From this horizontal "stovepipe" comes a blast of shimmering heat and the whiff of burning kerosene. It is a new, hush-hush prototype of Heinkel's, the He-178—the world's first flyable jet plane! From this almost unknown have come the basic design principles of all our modern jet engines and

Monomail (1930)

planes. It is without question the father of the jet age.

It is but a short step to our next milestone of aviation. Another age-old medium of propulsion has been reharnessed by modern technology. Back in the time of the Ming Dynasty, the rocket was known and used in both peace and war. Now, charged with potent liquid chemicals instead of crude Chinese saltpeter, and with the complicated plumbing of the Walter engine replacing the cone-shaped charge of black powder, rocket propulsion had assumed a new and more usable form.

The plane in which this potent scientific Genie is imprisoned is short, stubby, with broad, swept-back wings and a ski-like landing skid. It is the Me-163, first service interceptor to be powered by a rocket engine and a deadly aerial weapon that may easily destroy America's Flying Fortress fleets. But time and production are operating against the new skyrocket. Instead of winning a bad war, it now occupies a more honored niche in history —it is the ancestor of the dawning age of rocket power.

About the same time, another departure from the trunk line of aviation history is being switched off the main tracks at Peenemunde. Fitted with a larger and still more powerful rocket plant, the slim, pencil-pointed form of the V-2 missile is emerging from its scientific cocoon. Until its bases in northern France and the Low Countries are finally overrun, it brings madly roaring death and destruction to England's crowded cities. Here is something new—the first practical realization of an old and terrible dream.

Plunging vertically from the sky in

He-178 (1939)

split-second menace, it is mankind's first bitter taste of space warfare. Although not a controllable missile in the present sense, or as ingeniously complicated as today's big sky borers, Von Braun's V-2 is nevertheless the potent parent of an era still in swaddling clothes—the age of space travel!

Now, the actual fighting is over. Back on the main tracks again, we approach a more scientific milestone. Spurred on by the wartime development of the gas turbine and rocket engine, man is ready to tackle the unknown menace of the sonic barrier. Like the direful prophets of old, modern Jeremiahs had long

Me-163B (1944)

warned of the dread shock waves of air's incompressibility. These waves could wrench the wings from any plane built—tear it apart!

Undeterred by such doleful theories, questing minds went bravely ahead. They had the power, now. All that was needed was an airframe in which to apply it. Bell engineers tore into the problem and came up with the airplane. Reaction Motors built the compact, powerful, four-burner rocket engine. An Air Force pilot kicked in with the courage and skill. So, one day over Muroc, the needle-nosed X-1 was borne aloft, released at altitude and the speed of sound was achieved and passed! Larry Bell's little bullet had crashed the barrier, made aeronautical history and ushered in the age of supersonics!

V-2 (1944)

Our final milestone looms ahead. Although not yet reached at this writing, it stands clearly revealed in the immediate future. The most secret of Uncle Sam's laboratories have been involved in this one and now they are slowly inching aside the security curtain. Soon they will unveil their Herculean baby. The prototype powerplants near completion. Contracts have been let and work started on a monster airframe to house the monster power. The keel has been laid and the ship is on the ways.

Bell X-1 (1946)

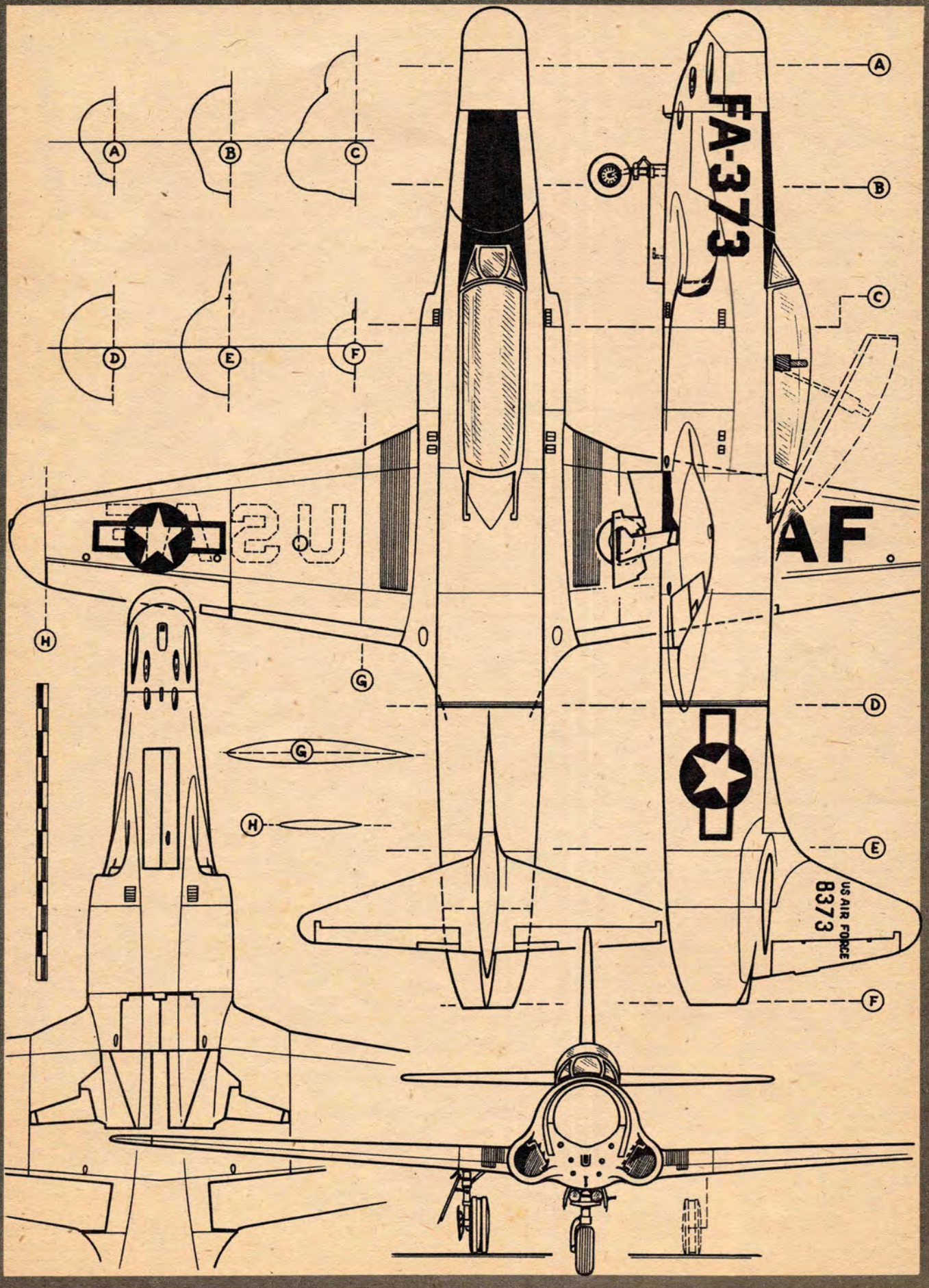
In a matter of months it will be launched and with it, all bonds of duration will be severed. Subject only to the limitations of metals and materials, the frailty of flesh and blood, flight can go on forever.

The day of atomic power is at hand!

But let's take one more quick glance at the "milestones" already passed. We are struck by two things—the time made and the terrain covered during aviation's monumental march into the unknown. Surely no other phase of man's mechanical invention through all the centuries has conquered so much important ground in so short a span of years!

LOCKHEED F-94

SCALED 3/16 IN. TO FT.; DRAWN BY BJORN KARLSTROM



AIR FORCE'S TOP TEAM RACER

CHOW HOUND

When the wild-blue yonder boys flew in the AF's International Model Meet—this was the best of the racers

■ Have you ever felt you *had* to have another entry for that contest just four days away? That's the way we felt, and so to the drawing board. We had to have a team racer and building time was scarce. Forty-five minutes later, out from under the drawing board crawled the *Chow Hound*. The original plane was built in two days and a night. After about twenty test flights we were ready. The next day, at the U. S. Air Force's First World Wide Model Airplane Championships, the *Chow Hound* sailed over the finish line 16 laps in front of the second-place plane.

In construction of a team racer, the most attention should be given to the engine. You must be able to start it easily even when hot. So test your Class B engines and pick the best one. We used a radial mount in the *Hound* which means the ship will take an Ohlsson, Veco, Orwick or Torpedo. With minor modifications you can shift over to a McCoy, Dooling, Fox or Forster. We have flown the *Hound* with both an Orwick and Torpedo .29. The K&B was faster, but the Orwick was more economical with the fuel—so it's wise to conduct your own flight tests.

For a smoother cowl we cut off the beam mounting lugs—but this is not absolutely necessary. The hottest ship doesn't always win—but the most reliable one usually does.

Begin construction on wing by cutting leading edge to shape and notch for 3/16" ribs. The purpose of thick ribs is to give more surface for gluing, eliminating much of the warpage when dope is applied. Cut out wing ribs and glue in place. For sheeting wing, use 1/16" x 6", or 2 sheets of 1/16" x 3" glued together. Glue sheeting to tops of wings first—and spread it on. Use pins to hold in place. When this is thoroughly dry, sand a taper to inside of trailing edge so bottom sheet will lie flat.

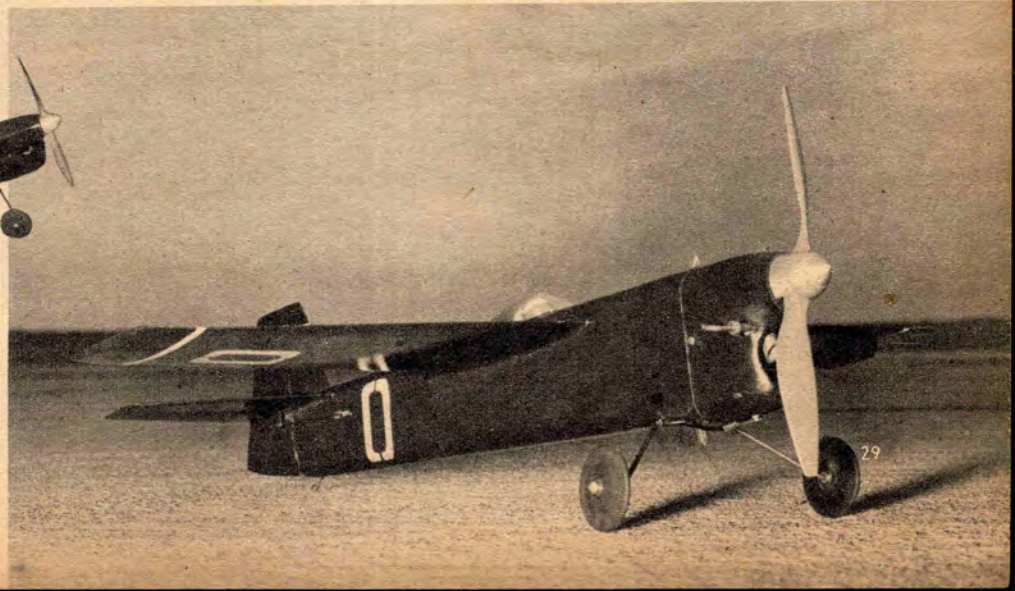
Glue bottom sheet in place, using pins or weights to hold forward part of sheet in place, and clothespins on trailing edge. When dry sand to airfoil shape. Notch out space in bottom of the center section to inlay the 3/32" plywood bellcrank mount. This must be mounted strong enough to take at least a 30-pound pull test when the ship is finished, so for safety's sake, mount it securely. Install the wingtip guide and lead-out wires.

Now comes the fuselage. Cut firewall from ⅛" plywood and drill motor mount holes for radial mounting. Glue sides cut from ⅛" balsa sheet to firewall. Next add formers A and B. Now install ⅛" plywood landing gear mount. Strengthen this by gluing ⅛" x ⅛" strips in the corners. Glue formers C and D in place. Sand a taper to inside of tail end of fuselage sides and glue together.

While this is drying, start con-

By SGT. B. A. THOMPSON

The author, Sgt. Thompson, startled National meet entrants with his 6-engine powered B-36 at the last Dallas meet. Previously he has entered a 4-engine B-17 job.



struction of tail. Use 3/32" plywood for the rudder; ⅛" balsa could be used, but in case of a nose-over, with plywood you'll be sure of another flight minus delay. The horizontal stabilizer is ⅛" balsa. The elevator uses a ⅛" x 5/16" hardwood spar to keep both sides rigid with ⅛" balsa elevators. Install cloth hinges and sand to an airfoil shape.

Cut out fuselage sides and install wing, using glue freely. Now glue horizontal stabilizer in place. Attach elevator horn, then cut slot in right side of fuselage for pushrod. Bend pushrod from 1/16" music wire and then install. Bend tail skid from 1/16" music wire, glue, mount in place. Using ¼" sheet, glue bottom onto fuselage. Leave front portion of bottom open to allow engine cooling air to escape. Using ⅛" music wire, bend landing gear to shape and attach to landing gear mount with "J" bolts.

Mount tank and fuel shut-off. The tank shown holds 1.8 cubic in. of fuel. That is, one oz., the maximum for team racers. Cut from tin, or shim stock, a triangle to solder engine mount bolts to. Attach to rear of firewall with small wood screw. Drill through the already drilled holes in firewall. Slide bolts in from rear and mount engine. Now solder bolt heads to triangle. Glue on top of fuselage—½" sheet. Cut a notch in the rear of the top for the rudder.

Start whittling. Round top and bottom, being careful not to cut through corners. Cut wing fillets from 1/16" sheet balsa and glue in place. Build up to shape with plastic balsa. Shape top to fit canopy and cut out for pilot's head. Now install rudder. Sand fuselage and empennage thoroughly. The cowl is next. This must be built around the engine you are planning to use. With a piece of soft rag, plug the intake and exhaust of your engine. Spot-glue ⅛" plywood cowl sides to firewall.

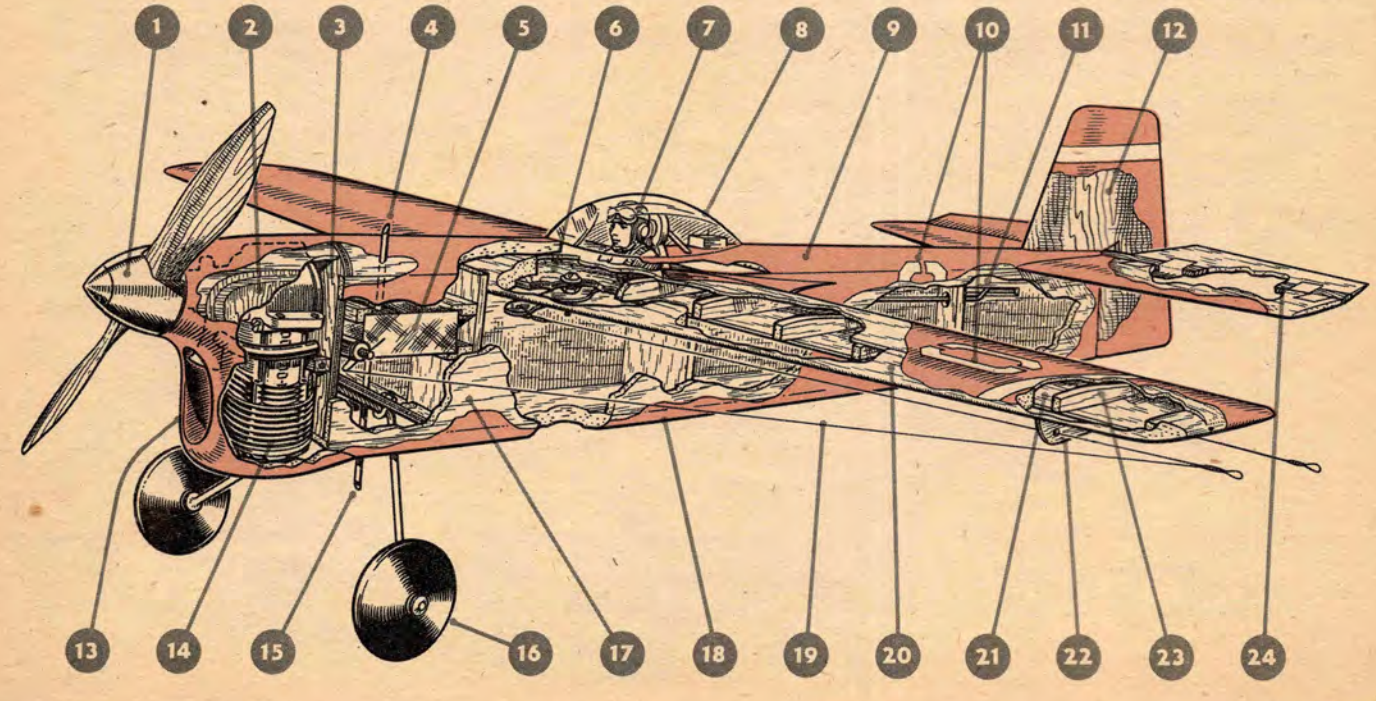
Cut slots for exhaust and needle valve, also for mounting lugs if they are left on engine. Carve hardwood blisters to cover the slot and any lug that extends out of the cowl. Insert blocks around engine as shown on plans, carving out the blocks before gluing so they fit tight around engine. Install 1¼" Froom spinner and carve cowl to shape and sand it. Cut out an air intake hole. Be sure it is large enough to provide adequate cooling, as a cool running engine restarts easier; and be sure you can choke your engine. Now cut a hole in the bottom of your cowl large enough to permit changing plugs. Cut away from the fuselage and glue two small hardwood blocks to the firewall to use as cowl hold-ons. Use a small wood screw through each side of the cowl into these blocks. By this time it should look like an airplane except for the wheels, so put them on. If we forgot to tell you to sand anything before, do it now.

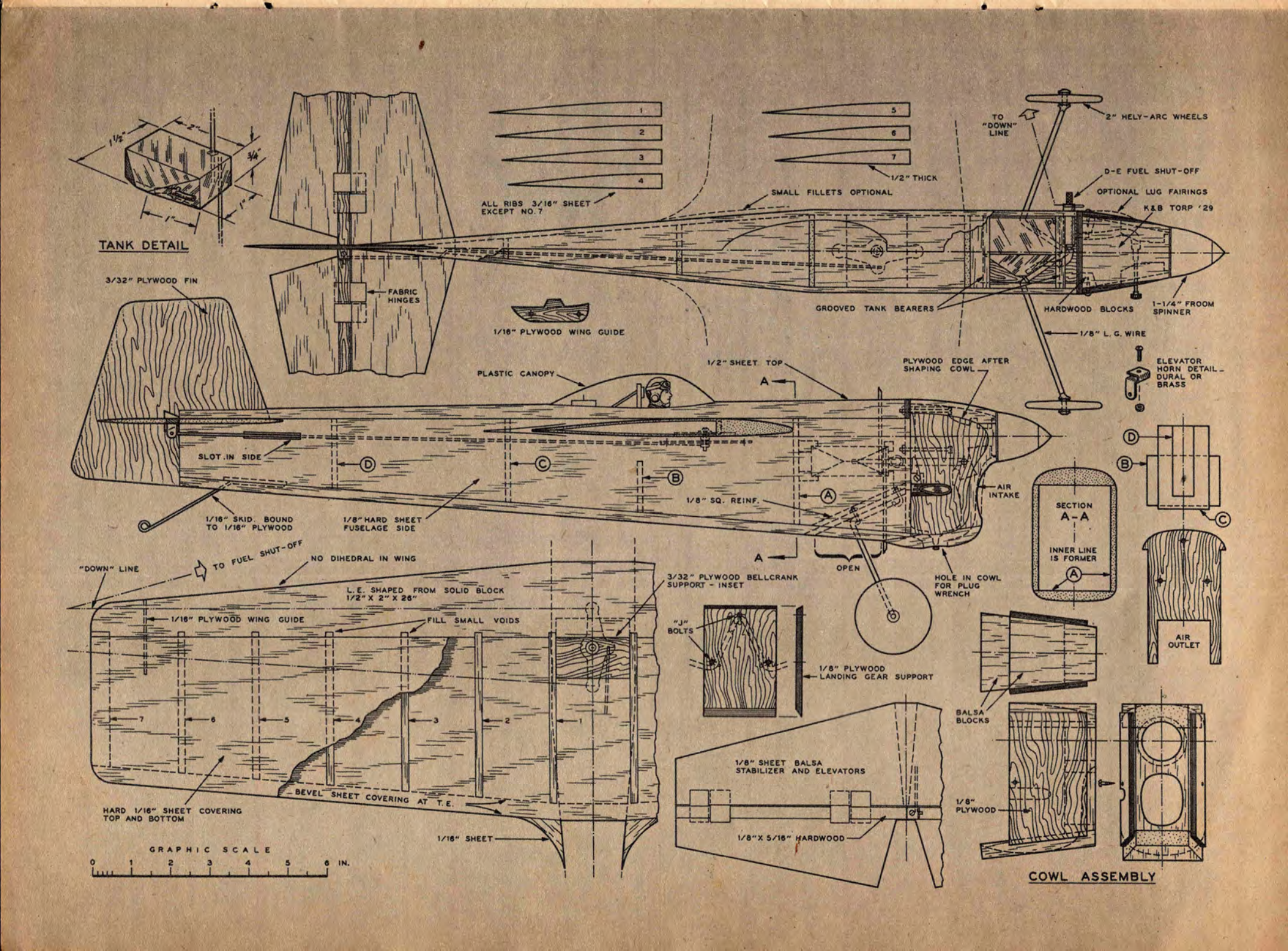
Put on a coat of sealer. We used Aero Gloss on the original, because of its hot-fuel-proof qualities, and recommend its use—but remember, everything must be Aero Gloss from the fillets on up. Sand and apply a second coat of sealer when this is dry. Sand and paint inside of cockpit. Build up headrest and radio. Paint these and then glue in pilot's head, install bubble canopy. Mask off canopy so it won't get smeared while rest of ship is being painted. From here on the finish is up to you, and don't forget a good finish helps.

Make up a wire (.016") with a clip on each end to hook between fuel shut-off trigger wire and down wire. Its purpose is to trip shut-off just as elevator hits full down. This is adjustable by length of the wire. Down was used instead of up, as too often the engine is killed on take-off when up is used.

With a little experimenting with props and fuel you will be able to increase your speed and decrease your fuel consumption.

1. 1¼" Froom spinner. 2. ⅛" plywood cowl sides. 3. ⅛" plywood firewall. 4. Tank filler tube. 5. 1 cu. in. capacity wedge tank. 6. Plywood bellcrank support. 7. Dummy pilot. 8. Plastic canopy. 9. Shaped ½" balsa turtledeck. 10. Racing numerals. 11. Control pushrod, 1/16" steel wire. 12. 3/32" plywood fin. 13. Air intake. 14. Ohlsson, Veco, Orwick or K&B Torpedo .29 engine. 15. Tank vent and overflow tube. 16. 2" dia. Hely-arc wheels. 17. ⅛" hard balsa sides. 18. Shaped ¼" balsa bottom. 19. Lead from "down" line to D-E fuel shut-off. 20. Solid balsa leading edges. 21. 1/16" sheet balsa wing covering. 22. 1/16" plywood line guide. 23. 3/16" sheet balsa ribs. 24. Hardwood elevator stiffener.




TANK DETAIL
1½"
2"
¾"
1"
1"
ALL RIBS 3/16" SHEET EXCEPT NO. 7
1
2
3
4
5
6
7
1/2" THICK
SMALL FILLETS OPTIONAL
TO "DOWN" LINE
2" HELY-ARC WHEELS
D-E FUEL SHUT-OFF
OPTIONAL LUG FAIRINGS
K&B TORP '29
3/32" PLYWOOD FIN
FABRIC HINGES
1/16" PLYWOOD WING GUIDE
GROOVED TANK BEARERS
HARDWOOD BLOCKS
1-1/4" FROOM SPINNER
1/8" L. G. WIRE
ELEVATOR HORN DETAIL - DURAL OR BRASS
PLASTIC CANOPY
1/2" SHEET TOP
PLYWOOD EDGE AFTER SHAPING COWL
SLOT IN SIDE
1/16" SKID. BOUND TO 1/16" PLYWOOD
1/8" HARD SHEET FUSELAGE SIDE
1/8" SQ. REINF.
AIR INTAKE
SECTION A-A
INNER LINE IS FORMER
OPEN
HOLE IN COWL FOR PLUG WRENCH
AIR OUTLET
"DOWN" LINE
TO FUEL SHUT-OFF
NO DIHEDRAL IN WING
L.E. SHAPED FROM SOLID BLOCK 1/2" X 2" X 26"
3/32" PLYWOOD BELLCRANK SUPPORT - INSET
1/16" PLYWOOD WING GUIDE
FILL SMALL VOIDS
"J" BOLTS
1/8" PLYWOOD LANDING GEAR SUPPORT
BALSA BLOCKS
BEVEL SHEET COVERING AT T.E.
HARD 1/16" SHEET COVERING TOP AND BOTTOM
1/16" SHEET
1/8" SHEET BALSA STABILIZER AND ELEVATORS
1/8" X 5/16" HARDWOOD
1/8" PLYWOOD
GRAPHIC SCALE
0 1 2 3 4 5 6 IN.
COWL ASSEMBLY

Top 10 Model Men

To determine America's outstanding aeromodelers, Air Trails polled 300 of the country's foremost contest flyers, model designers, club directors and contest managers. This is their selection and a grand group of model men it is. The Editors express their appreciation to all those who made this selection possible by cooperating in the survey and extend their sincere congratulations to the "Top Ten"

Henry Cole, Jr. . . . Known far and wide as Hank, resides in Mountain View, Calif., is good example of a fellow who found scientific modeling interesting enough to pursue to the inevitable conclusion . . . he's now Aeronautical Research Scientist with N.A.C.A. Became interested in miniature planes in 1936 when he saw magazine plans by Frank Zaic. Ship must have been a success, for Hank has been building ever since. Has always favored the scientific approach, culmination of which is his "O-s-o-l-o-n-g" Wakefield design, which caused a genuine revolution in Wakefield circles. Won the Nats' Mulvihill rubber event in '51 with a ship of the same elongated design; probably best known for his rubber and flying wing designs, but has been active—and successful—in practically every phase of model aviation. He held the Class A Speed record in 1947. Served three years on Navy Carrier as an aircraft maintenance officer. Spends most winter spare time skiing and is as yet unmarried. Now a member of Oakland Cloud Dusters, I.A.E., A.M.A.

Dennis Davis . . . Denny (Hogan) Davis also commenced model building in 1936. Intrigued by building something that would fly, Denny notes it took an awful lot of cement and balsa before he achieved even limited success. A San Diego resident, he is best known for long and successful free flight series (San De Hogan, Mini-Hogan, San De Man, PAAgan, etc., etc.), many of them available in kit form from Berkeley. Very active contest flyer and member of San Diego Aeroneers. One of few of our Top Ten not employed in full-size or model aviation, Denny is an artist engaged in design and planning work. Was first modeler to achieve the maximum 30 min. time in contest F/F gas (Class C—Bakersfield 1948). Has taken countless top places in F/F flying, including A & D first at '49 Internationals and A at '50 Nats. Denny is unmarried, spent three years in Navy air service. Says his top modelplane interest is relationship between various model components. Sounds like the "scientific approach" again!

Frank Ehling . . . Frank ("Silent Man") is a designer for Jasco and responsible for many of this firm's present line of rubber and gas power kits. Has had innumerable ships described in modelplane magazines. An inveterate contest flyer who always shows up with something new and different. Started modeling in 1926 when he tried to copy flight of birds. Has been active in power modeling since the first engines were available and has put them on everything (including one on his bicycle!). Initially interested mostly in scale jobs, including solid, rubber, and gas, has tried every other category since. For fun flying prefers towline gliders. Four years as Radio Operator on B-17's during the war. Frank is unmarried, and his other hobbies are raising tropical fish and cage birds in his native Jersey City, N. J. Has held several A.M.A. records in gas, CO_2, and helicopters. Considers rotating-wing helicopter record ship his outstanding design; it was the typical Ehling different approach. A real craftsman in model construction.

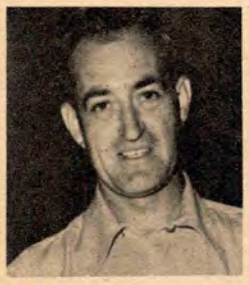
Dick Everett . . . Air Trails' West Coast columnist, Dick, despite an extremely active modelplane career, has acquired a wife and three potential future modelers. Now employed at Convair in San Diego on Radio and Electronic Mock-up. Here is another all-around builder whose favorite branch of our hobby is gliders. Has a towline R/C job made expressly to capture the F.A.I. record in this category. Took first in both outdoor rubber events at 1950 Nats, a first in towline, and two seconds in hand-launch at Dallas in '51. Top designs are probably his "El Lobo" hand-launch, and "El Sobo" towliner. Popular rubber designs should also be mentioned. A baby R.O.G. in action at high school auditorium started Dick off in 1934. Was in Air Force Reserve during war, assigned to N.A.C.A. at Hampton, Va. Has had side hobbies of golf and photography, but always goes back to model planes. Dick is member of A.M.A., San Diego Airliners, past holder of many records, present holder of Class B Open H/L Outdoor Glider.

Carl Goldberg . . . Truly one of the country's outstanding modelairmen. Need we say more? Another builder who started with Baby R.O.G. (how many do nowadays!!?). This was in 1928. Same year he went to first Nats, saw indoor job in action and fell in love with them; also, made 26 seconds with outdoor twin pusher. Won New York Indoor Championship in 1929. Battled in every Nats indoor meet until he finally hit top place in 1934 at Akron with 22:59; also first in '35, '36, '38. In latter year built first "Zipper," starting the F/F pylon trend that is still with us today. Carl went to work for Comet in 1939, had all sorts of trouble with experimental gassies at Nats same year, while everyone else was winning with his "Zipper" and "Mercury" designs. Finally achieved success with "Sailplane," which, with previous two, cleaned up meets in 1940. Developed pop-up dethermalizer. Resides in Chicago, has wife and two children, is head design man at Top Flite, member of Chicago Aeronuts.

Dr. Walter Good . . . Though known primarily for his great contributions to Radio Control, Walt was an indoor rubber enthusiast early in his modeling career, got his first modelplane thrill from a baby R.O.G. in 1927. Went into F/F gas next, and has had time for little but R/C since 1935. His "Guff" held 1939 F/F record for 30 sec. engine run. Is married (fortunately, wife, Joyce, is very modelplane minded), has two children. Walt is another extremely active modeler now successful in scientific fields; he is a physicist, was engaged in development of proximity fuse during war. Has been Chairman of A.M.A. R/C Committee for 10 years. Says his three-year assignment as Contest Board Chairman was *really* rugged. Resides in Bethesda, Md. (near Washington), and has been untiring in efforts to get F.C.C. to give R/C boys a break—success appears imminent. Best known for his results at Nats R/C Events (won, with brother, Bill, in 1938, 1939, 1940, 1947, and alone in 1949). Top designs: "Guff" and "Rudderbug."

Dick Korda . . . Another real old-timer in modeling, Dick became involved with models in 1927 when his Dad gave him an aluminum plane that actually flew. Built his first successful ship at age 12. He is starting Dick, Jr. on the same path; son is 13 and "about 50% model builder." Has a daughter who hasn't succumbed —yet. Dick is a tool and die maker, lives in Euclid, Ohio, owns a J-3 Cub and has piled up over 400 hours' time. Other hobbies are deer hunting and fishing. Probably best known for his Wakefield work; the "Korda design" is still a standard of comparison all over the world. He won the '39 Wakefield held in New Jersey. Has had various forms of hard luck in this tough competition right up to 1951. He's still at it though—sez, "Maybe in 1952 . . ." Has held Rubber Open Stick and Fuselage records (1935, '37) and Class B Gas in '46. His greatest interest in modeling is the thousands of miles traveled, thousands of friends made. Attends contests with "Red" Hilligas and "Robbie" Robinson.

Lew Mahieu . . . Among our Top Ten, Lew is a mere youngster, but has made up for it in the intensity of his activities. Started modeling career at 9 when he received a free glider from his barber. Career is correct term, for Lew is now Sales Manager for K&B. Before that he marketed "Supersonic" fuel. Known far and wide for his speed activities, Lew comes to the mind of most flyers only in connection with screaming high-speed engines. This is probably natural, for a few years ago he held all four A.M.A. Class Speed records at once. He also took Speed firsts at the Nationals and Internationals in 1949-1950. Actually, Lew has been active in rubber, H/L and Towline Glider and Stunt, though without any top contest wins. F/F gas work has been more productive, however, and his "Zeek" design and others have achieved real success. For contest work he prefers speed—for sport, F/F gas. Lew used to rebuild cars and played golf, but modeling displaced these hobbies. Recently married; wife Sandra is now building models.



Jim Walker . . . Every industry, large or small, has one member who is an outstanding showman, inventor, demonstrator, salesman. In modeling circles it's Neville E. (Jim—who else!) Walker. Jim is the oldest of our select Top Ten, but his energy and coordination are such that few younger modelers can keep up with him. Started building in 1916, a spruce stick monoplane. Started A-J Aircraft in 1926; his gliders and powered models have probably been a stronger force in interesting newcomers in model aviation than any other influence you can name. Has pioneered in manufacturing ready-to-fly jobs; his sole kit is the "Fireball," but this one pioneered prefabrication. Jim built and flew several man-carrying gliders and motorcycle-engined planes; tackles everything with all-consuming enthusiasm. Doctor once told him to take up golf "for relaxation"; short time later Jim was winning tournaments! Generally known as father of U-control. Dominant hobby is R/C; won Nats R/C event 8 out of past 11 years.

Frank Zaic . . . This soft-spoken genius of the gliders is a real authority on worldwide modeling. Has made several extensive European trips, visiting flyers in every country he could reach. Took up modelplanes in 1926 after tiring of several other hobbies. Formed pioneer model concern, Jasco, in 1932; seeking diversion while parents were abroad, Frank with brother John and friend John Young went into model business. Best known for his Model Aeronautical Year Books published before the war. His glider designs, still sold in kit form, still win contests. Active in Wakefield affairs, Chairman of A.M.A. Wakefield Committee for several years. Frank was engaged in Air Force Public Relations work for 30 wartime months; is unmarried, lives in New York City. Has flown full-size gliders. Much interested in model design problems and has evolved some interesting theories in miniature aerodynamics; his streamlined Wakefield design still in widespread use, and his "circular airflow" ideas are catching on.

adding RPM's *to Piston Ring Engines*

Given up on that old piston ring engine? Got one of the big babies that has gone sour? You'd be surprised how easily you can rejuvenate a puny powerplant by means of rebuilt and refitted rings

By WALTON HUGHES

■ How are the piston rings in your engine? Here is one detail that most model airplane fans completely overlook. Worn or loosely fitted rings are one of the largest factors contributing to hard starting or loss of power. If you want your engine in peak condition, the following information should be of interest.

Let's look into the function of a piston ring and discuss how and what it does before considering any repairs. Some model engines use no rings at all. This is possible when using a cast-iron or steel piston because very little expansion takes place. A running clearance of .0005" will seal compression and allow for the small expansion.

High-speed engines perform better with light moving parts, so aluminum is used, but this leads to expansion problems. If an aluminum piston were fitted close enough to seal compression in a cold engine, expansion would cause the piston to stick after a few seconds' running. On the other hand, if enough clearance were allowed for expansion, the piston would be too loose when cold and it would be impossible to start the engine or run it at low speed.

The solution is to leave the piston loose and seal compression with a cast-iron piston ring. A complete seal is made by contact against the cylinder wall and lower face of the piston ring groove. Spring pressure holds the ring on the cylinder wall so the piston can expand or contract without breaking the seal. When high pressure from an explosion acts against the ring, it is forced into closer contact with the ring groove and cylinder, thus making a tighter seal.

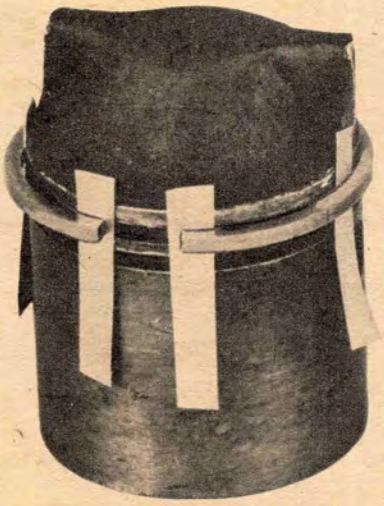
Several types of rings have been used during the development of gas engines and they vary chiefly in the means of creating the necessary spring action. Early engines employed an eccentric ring. The name results from the hole being out of center with the outside diameter. This was done to create more spring on the portion opposite the ring gap in order to equalize pressure on all surfaces of the cylinder.

A later method was developed to produce the well-known "hammered ring" still found in some present day automobile engines. This type is made by hammering the inner surface of a uniform thickness ring. The hammering sets up strains in the metal, causing it to spring out against the cylinder wall. Next the ring is clamped with the gap closed and ground to close tolerances and a mirror-like finish.

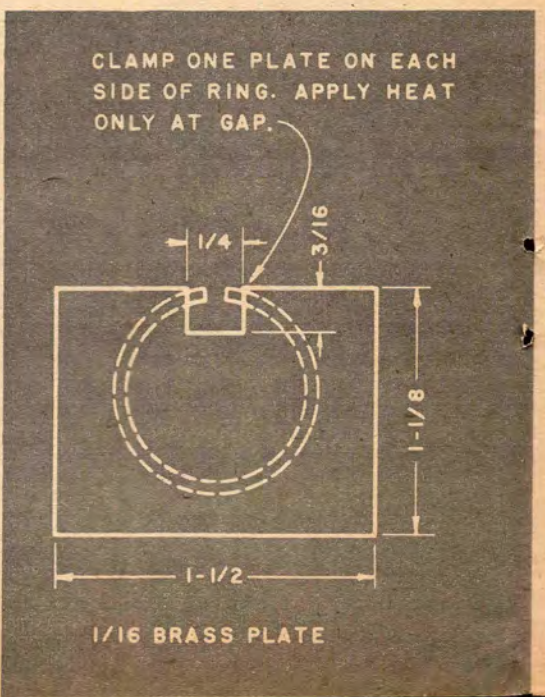
A cheaper and more popular method is to machine a rough cast-iron tube, split it and spring the gap closed. With the metal spring in, a round ring is machined which springs open when the clamp is released. Most of the present-day automobile rings are produced in this manner.

The piston ring gap is a subject of much controversy. Large engines have long used a lap or angle joint. Recent tests show that these are little better than a plain butt joint so they are no longer used on rings of four inches diameter or less. The three types of joints are illustrated.

Rings for model engines would be far too expensive if produced by any of the above methods. Most of them are made by turning an odd egg-shaped ring in one operation. This springs into a round ring in the cylinder and gives fairly even



Piston rings removed with pieces of shim brass without danger of deforming them.



pressure. The largest difficulty occurs at the ring gap. A small tolerance must be allowed for manufacturing, and as the ring breaks in, due to wearing away of high spots, the gap increases.

A well-broken-in engine usually has a larger gap than actually necessary for expansion allowance. On the other hand, a piston ring made carefully enough to break in with exactly the right ring gap would cost more than the average engine on the market today, so manufacturers must settle for a practical compromise between precision and cost.

Old engines with loose rings are limber enough to run at high speed but are difficult to start and lose some power due to leaky rings. For those bugs who want peak speed, and are willing to do some tedious work to get it, a repair job can be done on old rings to bring back a perfect compression seal but still retain the loose low friction characteristic necessary for high speed. Don't start if you just want to save the price of a new ring, because the labor and materials are worth the price of three new rings. But if you want top performance, dig out that limber engine and let's go.

Remove the piston and take out the ring, being careful not to spring it out of shape. An excellent method is to use shim brass strips as shown in the photograph. Lift one end of the ring with a straight pin and slide a shim under it. Slide the first one around to the back and insert two more at the gap. Now the ring can be slid off in either direction without unnecessary stretching. Keep the two rings separated so they can go back in the correct groove. Each ring breaks in to fit its own ring groove and might leak if switched around.

Prepare the ring for soldering by cleaning the ends and then clamp between two brass plates as shown. This is necessary to keep the ring cool and avoid warping. Place the ring between the plates and clamp with very light pressure. Now slide a thin knife in against the ring and spring the gap closed, leaving 1/16" opening, and tighten the clamp.

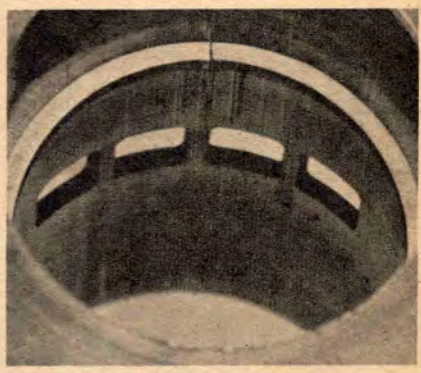
Most all jewelers handle a material known as silver solder. It looks like brass, but melts at approximately 900 deg. F. You might be able to talk your local jeweler into doing the soldering job since it is so small. Or perhaps you could get the silver solder and go to an auto body repair shop. Small welding torches used on sheet metal are ideal for this job. Ask the welder to apply as little heat as possible on the brass plates.

Now the ring must be finished and re-fitted. Start by filing both faces flat on a 12" mill file. Hold the ring between the fingers and rub against the file applying pressure only at the ring gap. Keep the ring flat and don't file away any cast iron. Using a 6" flat needle file, cut the outside down even with the ring. Exercise extreme care on this part because here is where the compression seal can be lost with one nick or flat spot. Remove any excess metal on the inside and the ring is ready to be split.

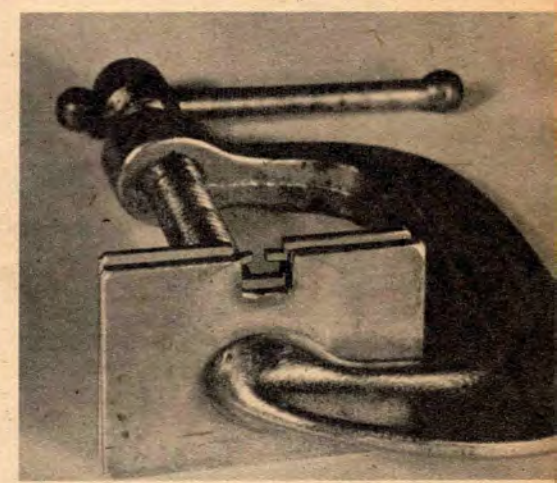
Saw in half at the old gap with a fine jeweler's saw, being careful to keep the cut square. Now check the ring in the cylinder for fit before filing the ends to see how much metal must be removed. Snap the ring into the cylinder with the ends overlapping each other and note amount of excess metal. Remove and file ends away till ring just fits into cylinder with the smallest possible gap. Check frequently to avoid removing too much metal.

When both rings are filed and re-fitted, assemble in piston, putting each ring in its correct groove. Saturate with oil and assemble engine for test run.

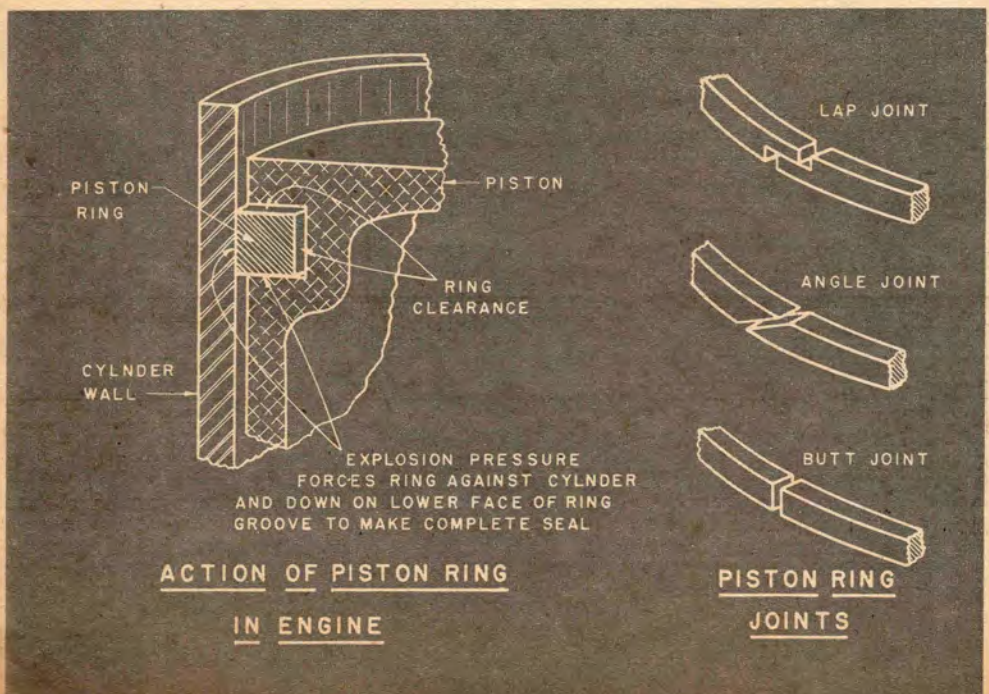
Don't race the engine immediately because the gap may be too close. Run it slow for a few minutes, then open it up slowly to allow any high spots near the gap to wear away.



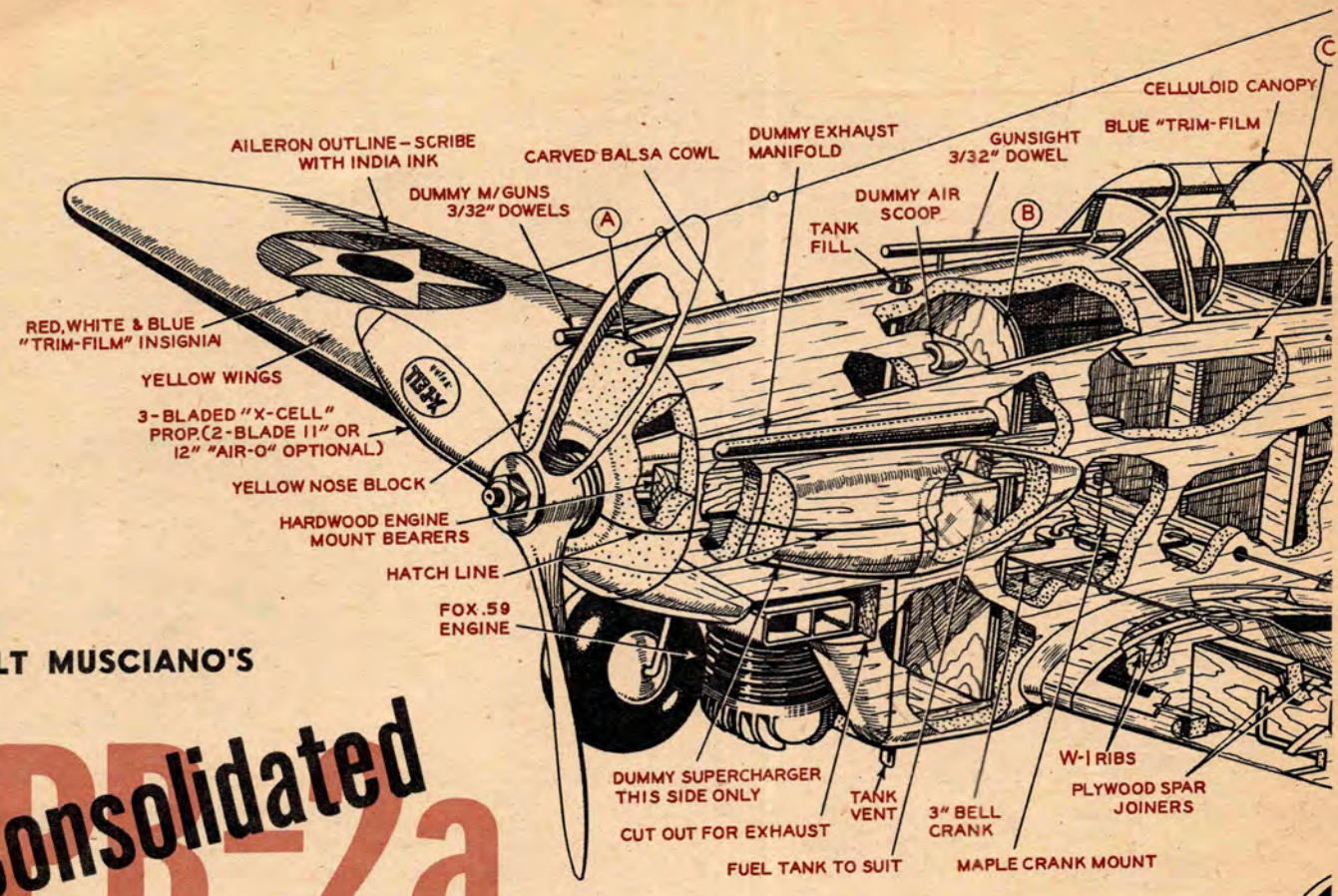
Repaired piston ring. Gap filled with silver solder. Compare with "before" photo below.



Ring clamped between two brass plates after thorough cleaning. Held with light pressure.


PISTON RING
PISTON
RING CLEARANCE
CYLNDER WALL
EXPLOSION PRESSURE FORCES RING AGAINST CYLNDER AND DOWN ON LOWER FACE OF RING GROOVE TO MAKE COMPLETE SEAL
ACTION OF PISTON RING IN ENGINE
LAP JOINT
ANGLE JOINT
BUTT JOINT
PISTON RING JOINTS

A large gap like this in a worn piston ring can cause hard starting and loss of power.



WALT MUSCIANO'S

Consolidated PB-2a

Although they never fired a shot in defense of U.S., these were formidable fighting planes

■ In 1932 the U. S. Army Air Corps felt the need for a heavier type pursuit plane of bi-place design. The Consolidated plant of Buffalo delivered the Curtiss "Conqueror"-powered YIP-25 test model to the Army in 1933, and it fulfilled all performance expectations.

It was then decided that perhaps this same design would make a fine ground attack ship, so the YIP-25 was converted to the YIA-11. The only noticeable changes were the removal of the supercharger (required only at high altitudes) and the installation of a two-bladed propeller. Four additional attack planes were procured and designated A-11.

An Allison engine was tested in one of these, and this was called the XA-11A. By 1934 the Army again became interested in a pursuit type and tested the design as the Consolidated P-30. This was modified to the P-30a and an order was placed for fifty of the all-metal design. One was converted into a single-place craft for testing (see plans). Finally, the Air Corps redesignated the design as the PB-2a, making supercharger and canopy improvements. PB meant "pursuit bi-place."

We used the Fox .59 engine for the model because of its low weight and height, high power and long shaft which allows for added weight in detail and finish while permitting almost complete concealment.

Wing construction is started by cutting main spars to shape and joining them by means of the plywood reinforcement. While this is drying, leading edge and ribs can be cut to shape. Mark off correct rib locations on the spar and slide the ribs onto it, root ribs first. Cement well. The ¼" square auxiliary spars are installed now. Cement leading edge in place at this time.

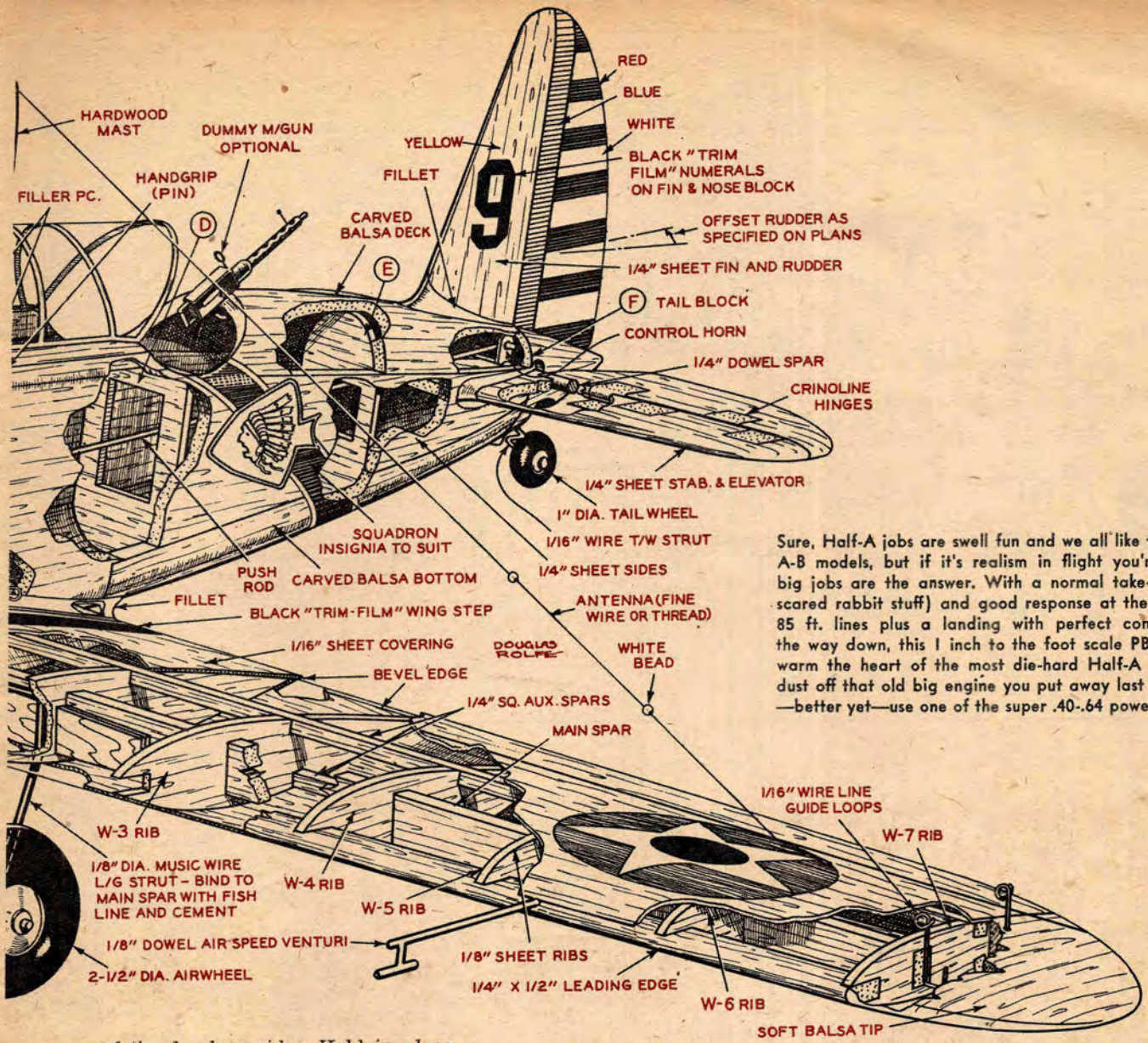
The landing gear struts are next bent to shape. These are wrapped securely to the main spar using fish line or strong thread; apply several coats of cement.

Now the wing is covered with 1/16" sheet balsa. We prefer a slow-drying cement for this operation such as Testor's Formula B. Center section is covered first. Cover bottom starting from the leading edge and working back. Hold in place with straight pins pushed through both the covering and ribs or leading edge. Remove pins when cement is dry. Bevel the trailing portion of the covering to fit the contour of the rib upper camber.

Now cover top of center section. Main outer panels are covered in same manner. Make certain that plenty of cement is used to hold the 3" wide sheet balsa to ribs and to each other at the seams. Wing tips are cut roughly from soft balsa blocks and cemented in place.

Sand entire wing thoroughly. Be sure the sandpaper is used with a block to insure even sanding. Apply two heavy coats of Testor's Sanding Sealer to entire wing and set aside to dry.

Fuselage is quite simple. Cut basic sides from ¼" sheet balsa including wing and tail cut-out slots. It will be necessary to butt-cement some sheets together in order to form correct width for fuselage sides. Cut all bulkheads at this time. Cement the engine mounts to the inside of the basic sides. The exact location of these mounts depends on the engine you intend to use. Cement bulkheads "B," "C" and "D" to one



Sure, Half-A jobs are swell fun and we all like to build A-B models, but if it's realism in flight you're after big jobs are the answer. With a normal take-off (no scared rabbit stuff) and good response at the end of 85 ft. lines plus a landing with perfect control all the way down, this 1 inch to the foot scale PB-2a will warm the heart of the most die-hard Half-A fan. So dust off that old big engine you put away last year or —better yet—use one of the super .40-.64 powerplants.

of the fuselage sides. Hold in place with pins. Now cement the other fuselage side to the bulkheads. Install bulkhead "E" and add the lower tail block at this time. Set aside to dry thoroughly.

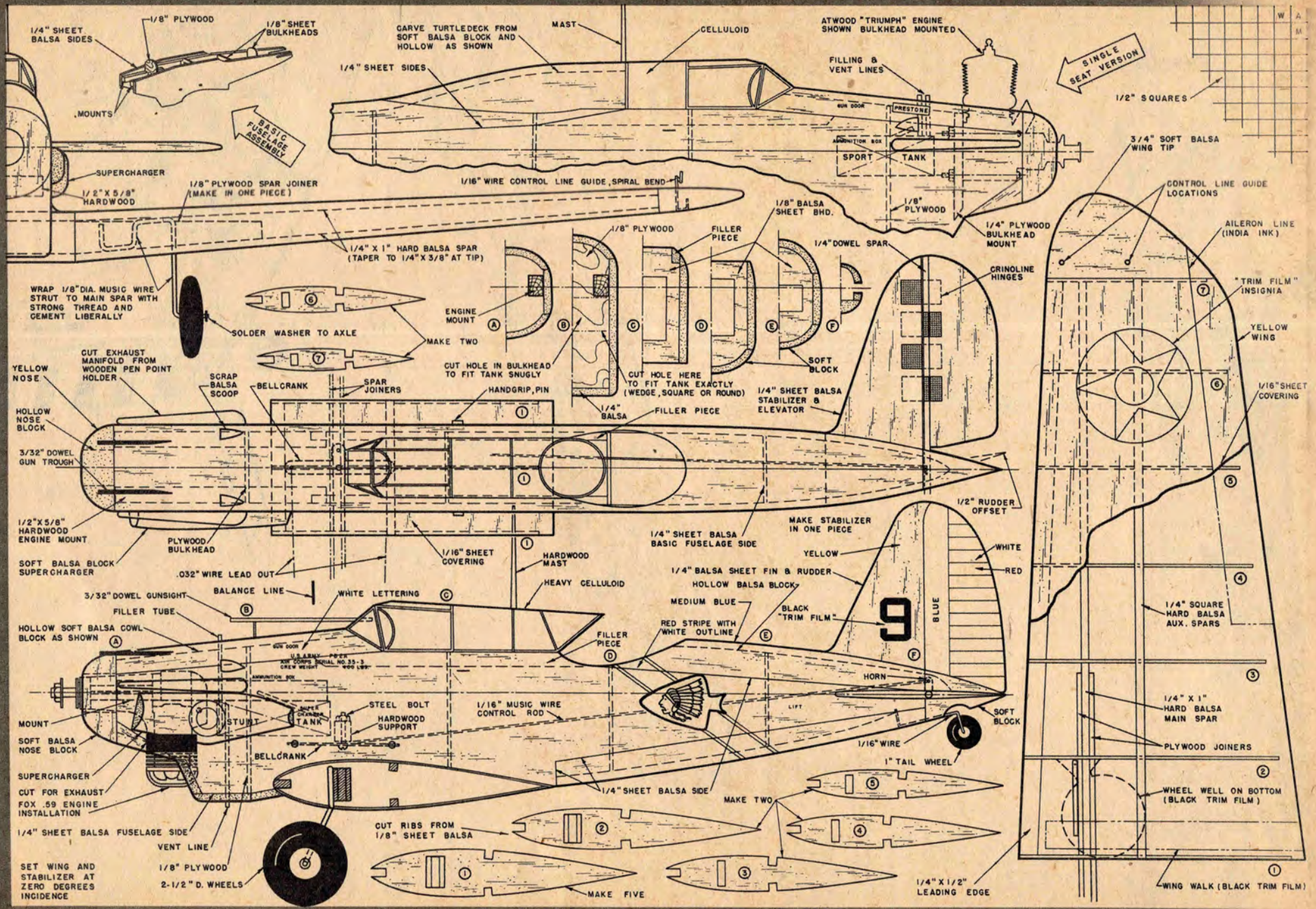
Assemble and install horizontal tail surfaces. Bellcrank can be fabricated by the builder or purchased at the local hobby shop. This is bolted to the hardwood support and the support is rigidly cemented to fuselage interior after lead-out lines have been attached. Bend and install control rod and solder a washer to both ends to prevent it from disengaging.

Install fuel tank. If you intend to execute maneuvers such as inverted flight etc., it will be necessary to use a stunt type of tank (Maeco or similar). For normal sport flying a rectangular or cylindrical tank should suffice. Add plastic tubing leads to the filling, vent and supply connections and then plug these to prevent balsa dust from entering.

Cement filler piece to the fuselage interior at this time. Saw fuselage top and bottom blocks to correct outline shape and then carve roughly to correct contour. Hollow as shown using an Xacto or similar gouge and cement these pieces securely to fuselage. (*Continued on page 72*)

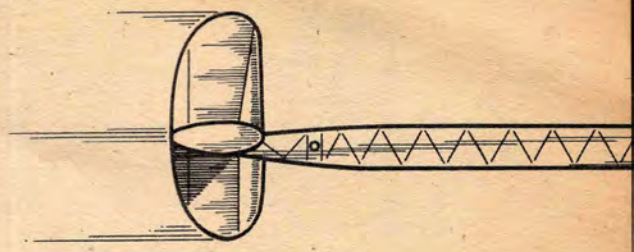
Ain't she purty? And doesn't the model look like the real thing? The PB-2a, generally remembered as the P-30, was an outstanding plane.

Consolidated PB-2a



Weird Wakefield
Wins Mulvihill.
Wotta Model!

O-S-O-L-O-N-G



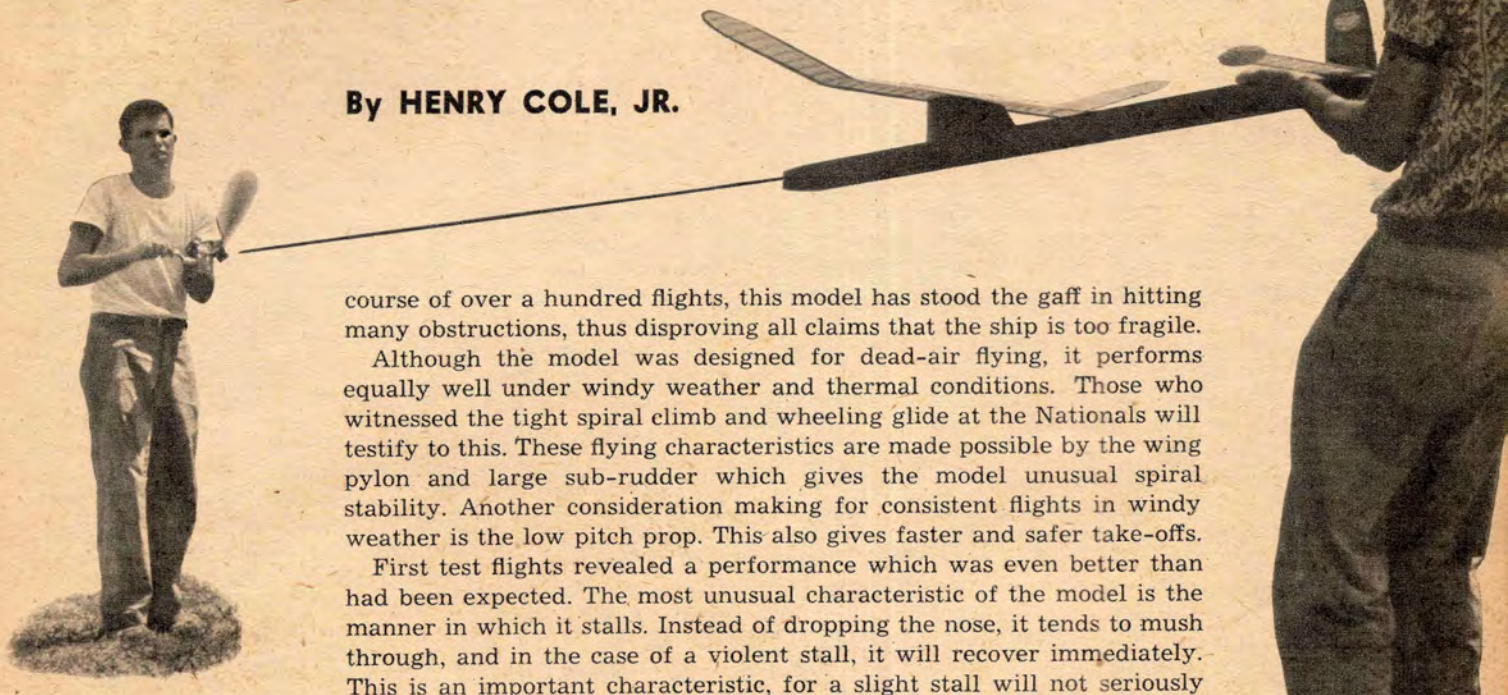
Here is the endurance model that started an entirely new design trend

■ In its short life, *Osolong* has created quite a controversy in the rubber model field. Experts have come up with a number of reasons why it won't work—too much "wetted area," the long fuselage is too fragile, the model will stall too much in thermals and wind, etc. In winning the Mulvihill Trophy at the 1951 Nationals in Dallas, *Osolong* proved all these things to be untrue except perhaps one. It dethermalized in the middle of a lake on both its first and second flights, and the "wetted area" proved almost too much.

It all started back in January 1951 when plans were formulated for a model to compete in the West Coast Wakefield eliminations. Since a good model for dead-air conditions would need about five ounces of rubber, the big question was where to put it. One way was to build gears as in Ellila's Wakefield winner of the year before. Another way was to tension the single motor in a slightly longer fuselage. Both these contain disadvantages, the former having too many fittings to make and the latter being unreliable because of the "strawberries" which are apt to form in the back of the fuselage. The simplest and most reliable system, it was decided, would be a single motor with no slack. Thus, *Osolong* was born.

A few calculations were made on the performance of a long job compared to a short job and it was found that, because of the extra load which the stabilizer can carry, the long job would have a lower sinking speed. This combined with the more efficient no-slack motor meant that the long job would both out-climb and out-glide a conventional model—provided the fuselage could be made strong enough without undue weight sacrifice. The Warren truss proved to be the answer, for it is durable and will hold the fully wound motor with ease. In the

By HENRY COLE, JR.



course of over a hundred flights, this model has stood the gaff in hitting many obstructions, thus disproving all claims that the ship is too fragile.

Although the model was designed for dead-air flying, it performs equally well under windy weather and thermal conditions. Those who witnessed the tight spiral climb and wheeling glide at the Nationals will testify to this. These flying characteristics are made possible by the wing pylon and large sub-rudder which gives the model unusual spiral stability. Another consideration making for consistent flights in windy weather is the low pitch prop. This also gives faster and safer take-offs.

First test flights revealed a performance which was even better than had been expected. The most unusual characteristic of the model is the manner in which it stalls. Instead of dropping the nose, it tends to mush through, and in the case of a violent stall, it will recover immediately. This is an important characteristic, for a slight stall will not seriously affect the duration of a long job as it will in the case of a short one. Early morning test flights revealed that the model was capable of better

The tamed Mulvihill Trophy is at left. Osolong is the original "Pogo Stick"; also called "Stringbean" & "Broomstick."

Here's the noted Hank Cole getting his "longie" away into the blue. You can read more about HCJr in the "Top Ten"—p. 32.

than 4 minutes without thermals.

The contest performance proved the worth of the design since it won the Northern California Wakefield eliminations with a three flight total of 712 seconds in dead air. This win convinced Manuel Andrade and Joe Foster of the merits of long jobs, and they built their own versions which later won two places on the Wakefield team.

Unlike most unusual models, *Osolong* is a snap to adjust. It should balance two inches back of the trailing edge of the wing! Yes, that's right. When the model is balanced properly, check the wing to see that it has the correct incidence. The leading edge should be one-quarter inch higher than the trailing edge. Now test-glide the model. If it stalls, increase the incidence of the stabilizer. If it dives, decrease the incidence of the stabilizer.

Do *not* increase the incidence of the wing, because it will seriously affect the flying characteristics of the model due to the unfavorable downwash pattern over the tail. When the glide is satisfactory, adjust the climb with right rudder, right thrust and a slight amount of downthrust. The climb should be a tight right spiral, and the glide a large right circle for calm weather and a tight right circle for windy weather.

The fuselage is simple to construct because most of the diagonals are the same length. The important thing is to have a long straight-edge handy to keep it straight. When the two sides are completed, turn one over so that the diagonals are in the opposite direction. Using the three square formers which contain the motor guides, cement the sides in place and finish with the top and bottom diagonals. Be sure to strengthen the area around the rear motor anchor. Model is wound by slipping a piece of ⅛" steel wire through the aluminum tubing rear motor anchor.

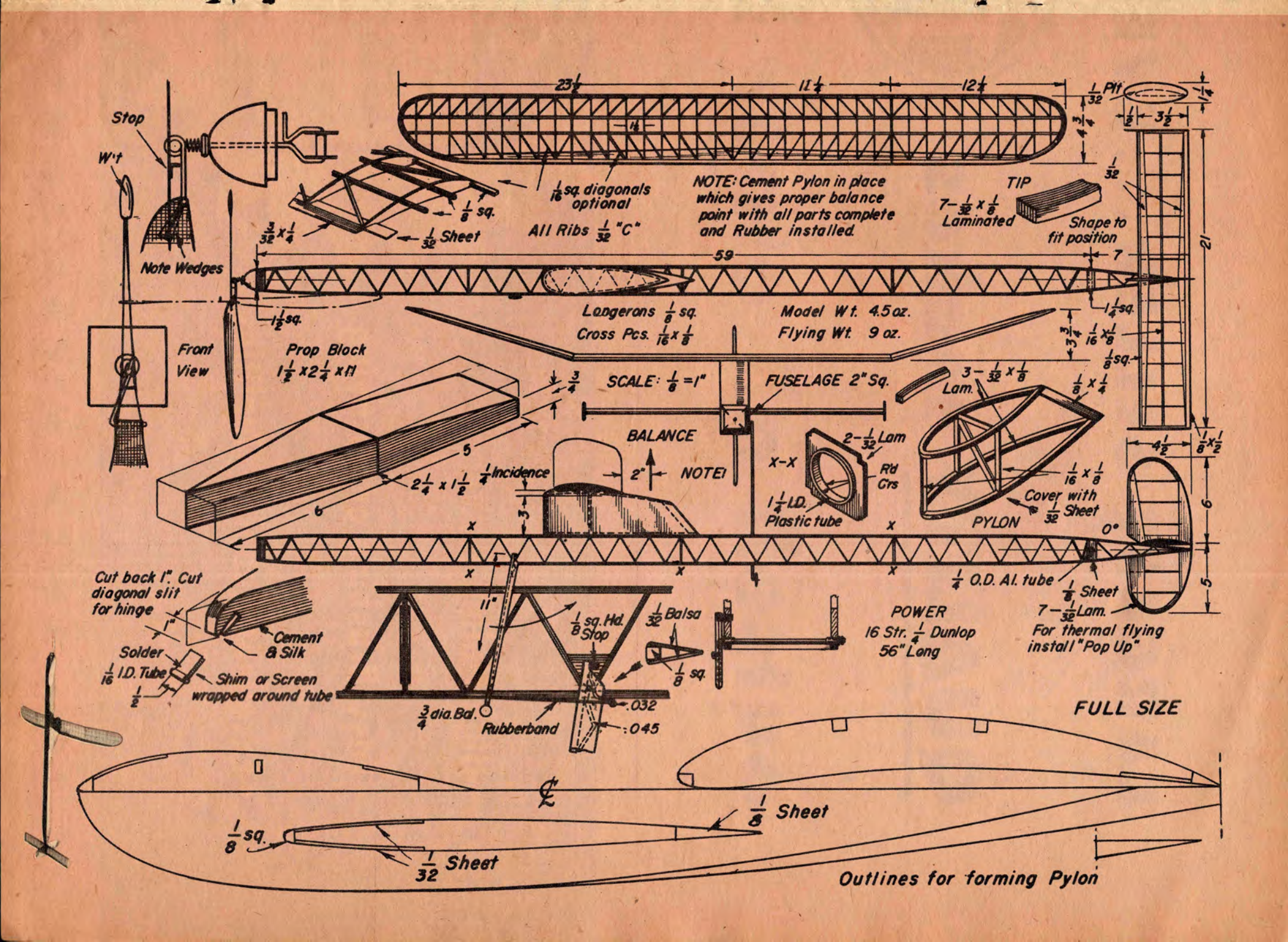
Wing and stabilizer construction are shown clearly on the plans. The 1/16 inch square diagonals in the wing are optional, but add considerable strength for their weight. So if you want a wing which will stand the gaff, be sure to put them in.

The landing gear deserves special mention as it has proved to be very reliable. The rubber-band retracting mechanism is on the outside where it is easily accessible. Note that the rubber band crosses the pivot point in the down position. This causes the landing gear to stay down until the model leaves the ground. As soon as the model is airborne and picks up speed, the drag pushes the landing gear back and the rubber band retracts it. This simple delayed-action gear is light, strong and reliable.

The propeller is a one-bladed folder with a counterbalance attached to the blade so that it folds forward when the blade folds back. This type of prop is easy to make, but must be balanced carefully to avoid vibration. Since the details of carving the prop and attaching the hinge have been covered in other articles, they will not be explained here, but I would like to point out that careful work on the prop will pay off in performance.

For ultimate performance in the Wakefield event, a super-light model would be best with light wood used throughout. However, this type of construction is not practical for thermal contest work because the model is too easily damaged. Therefore, it is recommended that your first long job be built with medium-hard balsa in the fuselage. The *Osolong* used at the Nationals was of this type and weighed 4½ ounces without rubber. With 16 strands of ¼ inch Dunlop rubber, 56 inches long, the model weighed 9 ounces and clocked 4½ minutes without thermals. A lighter version of 3½ ounces was built and will clock better than five minutes in dead air.

That's the story of the long job. All in all it adds up to one thing. If you build an *Osolong*, you'll be in for longer flights.


Stop
W't
Note Wedges
Front View
Prop Block
1½ x 2¼ x 11
23¼
11¼
12¼
14
1/16 sq. diagonals optional
All Ribs 1/32 "C"
NOTE: Cement Pylon in place which gives proper balance point with all parts complete and Rubber installed.
TIP
7 - 1/32 x 1/8 Laminated
Shape to fit position
1/32 Pit
1/8 sq.
1/32 Sheet
3/32 x 1/4
59
7
21
1/32
1½ sq.
Longerons 1/8 sq.
Cross Pcs. 1/16 x 1/8
Model Wt. 4.5 oz.
Flying Wt. 9 oz.
1¼ sq.
1/16 x 1/8
1/8 sq.
SCALE: 1/8 = 1"
FUSELAGE 2" Sq.
3/4
5
6
2¼ x 1½
1/4 Incidence
BALANCE
2"
NOTE!
3
3 - 1/32 x 1/8 Lam.
1/8 x 1/4
2 - 1/32 Lam
Rd Crs
X-X
1¼ I.D. Plastic tube
1/16 x 1/8
Cover with 1/32 Sheet
PYLON
4½
1/8 x ½
6
5
0°
1/4 O.D. Al. tube
1/8 Sheet
7 - 1/32 Lam.
For thermal flying install "Pop Up"
Cut back 1". Cut diagonal slit for hinge
1"
Cement & Silk
Solder
1/16 I.D. Tube
1/2
Shim or Screen wrapped around tube
11"
1/8 sq. Hd. Stop
1/32 Balsa
1/8 sq.
3/4 dia. Bal.
Rubberband
.032
.045
POWER
16 Str. 1/4 Dunlop
56" Long
FULL SIZE
1/8 Sheet
1/8 sq.
1/32 Sheet
Outlines for forming Pylon

LARGEST SELLER...EVEN

QUALITY makes T

outsell all other b

- High Hiding Power
- Easy Brushing or Spraying
- Excellent Rubbing Qualities

TESTOR CHEMICAL COMPAN

EN AT A HIGHER PRICE!

TESTORS DOPE

brands combined!

- High Flexibility
- Film Toughness
- Pure Color Brilliance

NY • ROCKFORD, ILLINOIS

It Pays to Load 'Em Up!

The model enthusiast who dreamed up the PAA-Load event tells what's ahead in free flight

By DALLAS B. SHERMAN

■ When the first few PAA-Load models were unwrapped at the 1948 Olathe Nationals, the editor of Air Trails dubbed me "PAA-Load Papa." Since then, he has continued to tag me with this label well beyond the mere requirements of editorial courtesy. When we met again at the last Dallas Nationals—face to face with 235 PAA-Load entries crowding the field—he demanded, "Look what you've done now! Your infant PAA-Load has grown into a healthy lad! What about his future?"

The 1952 PAA-Load trail is reasonably clear to spot. Contestants have discovered that Half-A jobs with only 3 ounces payload aboard are outperforming themselves. So, for 1952, the Half-A dummies will tuck another ounce of lead under their belts and crawl into their snug cockpits weighing 4 ounces instead of 3. The fortunate part of this is that these smart juniors can stomach the extra ounce without taking on a middle-age spread. Thus, they will keep their streamlined figures and be able to fit comfortably into the same-sized cabins they have used in the past.

D. (Balsa Butcher) Sherman (right) with Gene Jackman, the 1951 National Junior champ and PAA-Load winner.

Review of the records plus considerable Half-A experimental flying with 4-ounce dummies indicates that this weighting will just about even up the performance of all PAA-Load models, whether Half-A with 4 ounces, A with 8 ounces, or B with 16 ounces. Once assurance is gained of this performance balance, all classes can compete against each other in a single event. At contests where there is a scarcity of timers, this will be a great help; also the prizes can be more valuable if their cost does not have to be divided into two classes. In 1952, we can expect the beginning of these all-class (Half-A, A and B) combination events in PAA-Load. A contest for GI's on Okinawa was along these lines, including 4 ounces payload for Half-A.

Write to PAA's Educational Director, George Gardner, at 28-19 Bridge Plaza North, Long Island City 1, New York, and he will send you PAA-Load Event 1952 Rules and Specifications booklet. Then you will have all the details.

(*Note: George Gardner advises that the standard PAA-Load Event rules for 1952 will call for two categories: Half-A for one, and combined A and B for the other—same as in 1951. But PAA will endeavor to set up some experiments with Half-A, A and B all competing against each other, to see how Half-A with four ounces fares in competition with the larger models, and find out how contestants feel about the proposal after trying it. Editor.*)

In only four years, PAA-Load has become an official AMA event, accepted everywhere by model aviation enthusiasts. Contestants are flocking to enter PAA-Load events in ever increasing numbers—300 is the estimate for the '52 Nats!

Although PAA-Load isn't necessarily restricted to free flight-gas, Pan American Airways elected to emphasize its sponsorship in this category. Pan American officials searched the various categories for the one containing the most educational possibilities through which to teach and illustrate the basic principles of air transportation. No one category covered the field, but free flight-gas came the closest to what was desired.

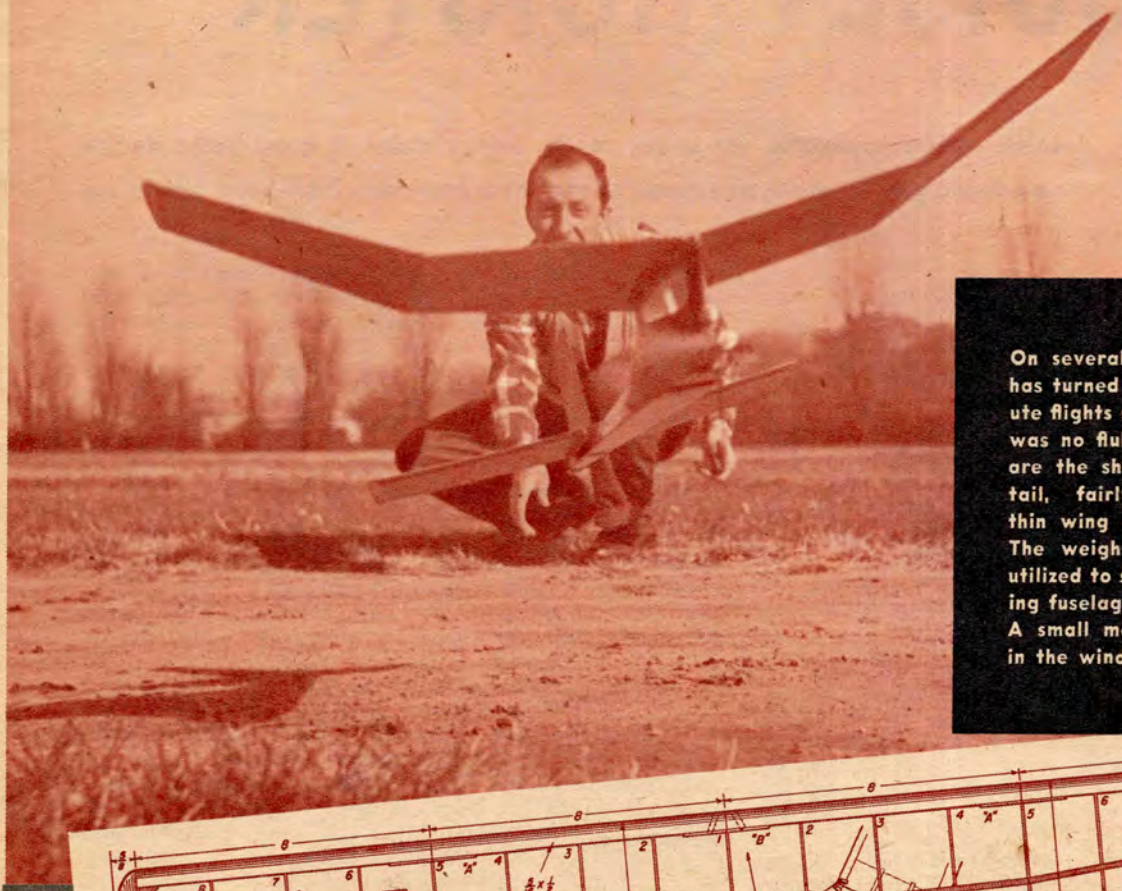
Here's how they charted it out in 1948.

Inherent Performance Characteristics Desired In Modern Air Transportation	Flying Model Category Best Illustrating These Characteristics
1. Take-Off	Free flight-gas
2. Climb	Free flight-gas
3. Directional Stability	Free flight-gas
4. Longitudinal Stability	Free flight-gas
5. Lateral Stability	Free flight-gas
6. Stalls and Recovery	Free flight-gas
7. Glide	Free flight-gas
8. Landing	Free flight-gas
9. Speed	Control line-Speed
10. Attractive Appearance	Control line-Scale
11. Maneuverability	Control line-Stunt
12. Payload Capacity	(Blank)

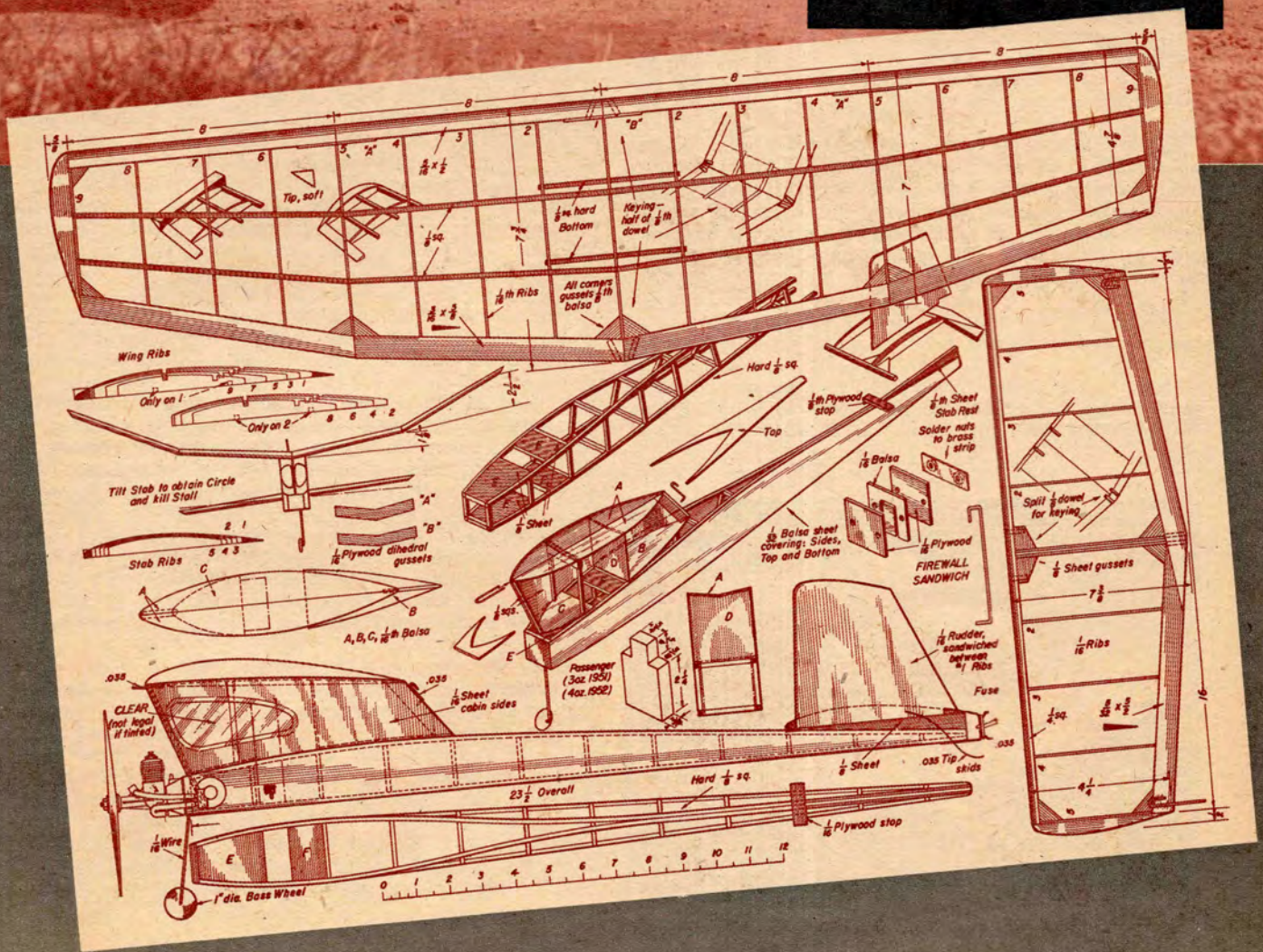
Champions of other categories may argue with the conclusions of this chart. (Radio control, due to high costs, wasn't much in the picture in 1948.) PAA officials did considerable arguing also, but in conclusion they accepted the free flight-gas category as best illustrative of 8 out of 12 of the characteristics required in modern air transport (*Continued on page* 61)

This is the model that racked up top time in the '51 PAA-Load National Contest—15:31.4.

Ehling's National Meet Half-A PAA-Load Winner



On several occasions this model has turned in consecutive 10-minute flights so its victory at Dallas was no fluke. Important features are the short coupled wing and tail, fairly low aspect ratio, a thin wing and stabilizer section. The weight of the dummy was utilized to shorten the nose, keeping fuselage length to a minimum. A small model can turn and fly in the wind best. —FRANK EHLING



The JOISEY HOISTER

Hoist: lifting apparatus for heavy loads. Joisey Hoister: good basic design for helping you to haul away some of that Pan-American PAA-Load hardware

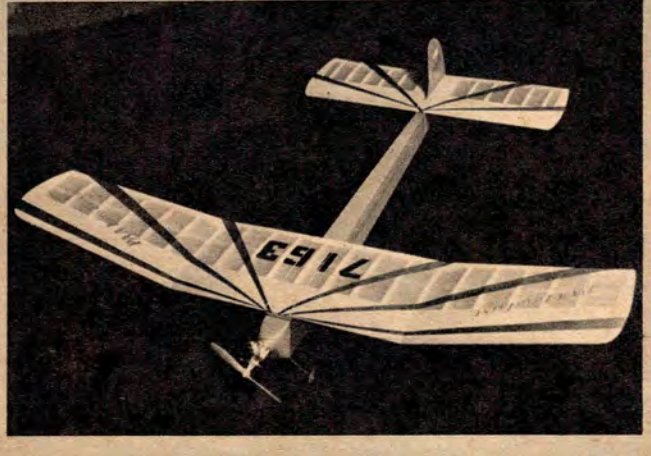
By TED GRZESCZAK

■ Tired of losing your models? Guess that's a sad question to ask any active model builder, but the PAA Load Cargo event eliminates all fear of that. With this in mind, you should be raring to go, knowing that at the end of a day's flying you will still have your ship and maybe some hardware to boot.

Since the "Cargo" event is comparatively new, one must stop to think what is needed to have a 5-ounce model lift approximately three times its own weight and still land in one piece. Being limited to .049 engine, we'll have to squeeze everything out of it plus whatever else will aid in making this weight lifter fly for 40 seconds on a 20-second run.

Since the model must R.O.G. and land intact, the landing gear size, type, and location are of vital importance.

Our original *Joisey Hoister* had a single strut landing gear. We soon found it was necessary to install a gear as shown on the plans. This was to allow the ship to take off and land in one piece. The gear must be strong enough to keep the wheels in perfect alignment. This is not required on lightly loaded models, but on heavily loaded models it is a "must." The original had a short tail skid and after a few R.O.G. attempts it was found necessary to lengthen the tail skid to decrease the fuselage angle. This permitted the model to assume its proper flight attitude without using all the runway to get into flight. It was discovered that large diameter wheels proved an asset where ground conditions were poor.



Thin wheels with axle support are best. On one occasion when the model hit a parked car, the "cargo" came through the bottom of the fuselage. The plans show the latest innovation Frank Ehling is using. This allows the cargo to emerge from the fuselage without damage.

To start the construction of this fuselage, cut the sides from 1/16" "C" stock. Cut the required bulkheads from designated size sheets. | Note that the #1 bulkheads are hard ⅛" sheet balsa. To assemble fuselage, it is best to invert the sides placing them over the top view drawing. Place the #1 bulkheads in position. Cement the rear of fuselage together. Starting with #2 and working to the rear, cement in the remaining bulkheads. The "V" cargo bulkheads, which are cut from hard balsa, are cemented in place as shown. While the bulkheads are drying, bend the landing gear into shape as shown on the plan. Bind with solder. Bind and cement the gear to the ¼" square strip and cement the entire unit in place.

The nose block is cut to size along with the two firewalls which are cemented together and then cemented to the front bulkhead. The fuselage top sheet is now cemented in position. The bottom can now also be cemented in place. This bottom sheeting starts at the rearmost #1 bulkhead. The sheets are now trimmed to size. Sand entire fuselage smooth. Bend and cement in place tail skid and stabilizer tie-down hook. Shape the nose block from the fuselage square to the round firewall.

The cargo platform is now built up of 1/16" sheet and ⅛" squares to fit. The entire fuselage is given a coat of clear dope and when dry, sanded. Be sure to use ample cement and gauze to secure the firewall to the nose block. Give the entire fuselage a coat of fuel proofer.

Make the wing in three sections. This is done when the builder has a restricted building area. Cut out the ribs of 1/16" sheet as shown on the plan. Lay out the leading edge and trailing edge over the plan along with the rear spar. Cement the ribs in place. When dry, cement in the top spar. Sheet the top with 1/32" balsa. Add the caps to the ribs. Mock up the three panels and cut angle for dihedral. Cut the wing gussets and cement panels together. Be sure to cement all joints well. Add the wing tips and carve to shape as per plan. Sand the entire wing and re-cement all loose joints.

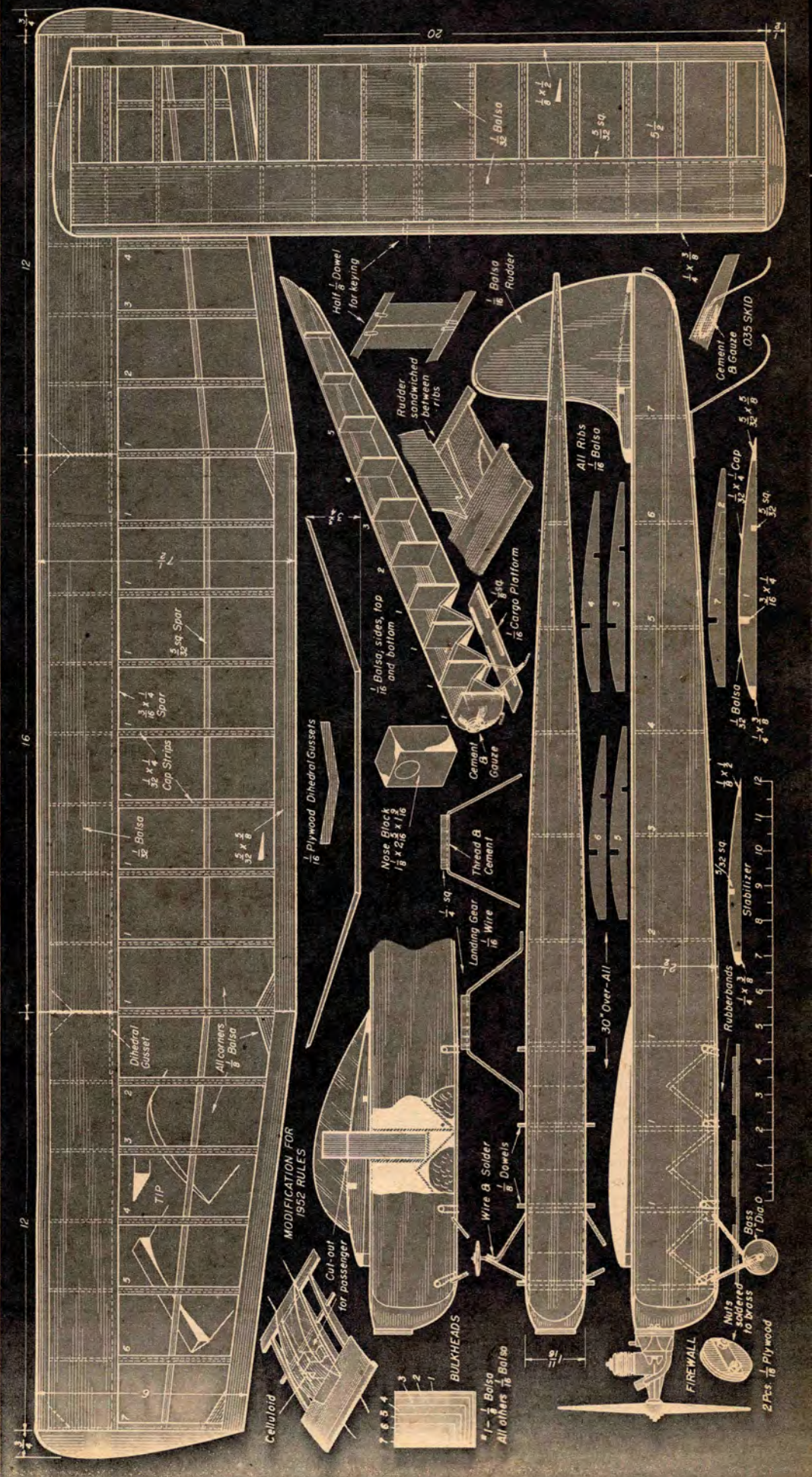
The stabilizer is made in much the same manner as the wing; however, there are no dihedral breaks. There are two center ribs for the rudder to sandwich in between. When sheeting the leading edge, cover the center section at the same time. Cap the ribs and add the tips. Sand the stabilizer and re-cement the joints. Cut the rubber from 1/16" sheet as outlined on the plan. Sand smooth and round edges. Do not streamline! Cement in place before covering the stabilizer. Cover the wing and stabilizer with tissue. Water-dope and set aside to dry. Add a little castor oil to the dope to help prevent warping. If any warps may accrue, they can be taken out with heat. *Do not hold over open flame.*

Lastly, give wing a coat of fuel proofer to complete the job.

To get the *Hoister* air-borne, start with approximately a 7-ounce cargo. Glide the model with the wing in the approximate position as shown. The cargo may have to be re-adjusted to obtain a flat glide. Start the engine, and with it running slowly, launch the model by running and let it lift out of your hand. This can be repeated time and again, adding weight with each flight until the model barely struggles aloft.

Now a real take-off can be tried, for the ship is flying smooth and no serious trouble should result. If model can take off and with a 20-second engine run turn in a flight of over 40 seconds, additional weight can be added until it takes off and consistently turns in a 40-second flight.

Incidentally, I live in New Jersey, and knowing from experience how guys elsewhere *claim* we pronounce our native state, I thought I'd save them the trouble in regard to the spelling of that part of the model's name. Hope you get a foist with it!



KIT PREVIEW:

PAA Master

■ In accordance with the new PAA-Load Half-A ruling requiring a four-ounce "dummy occupant," Jasco has brought out the "PAA Master," a new free flight model which is an improved version of Frank Ehling's model that placed first in the 1951 Nationals at Dallas, Texas.

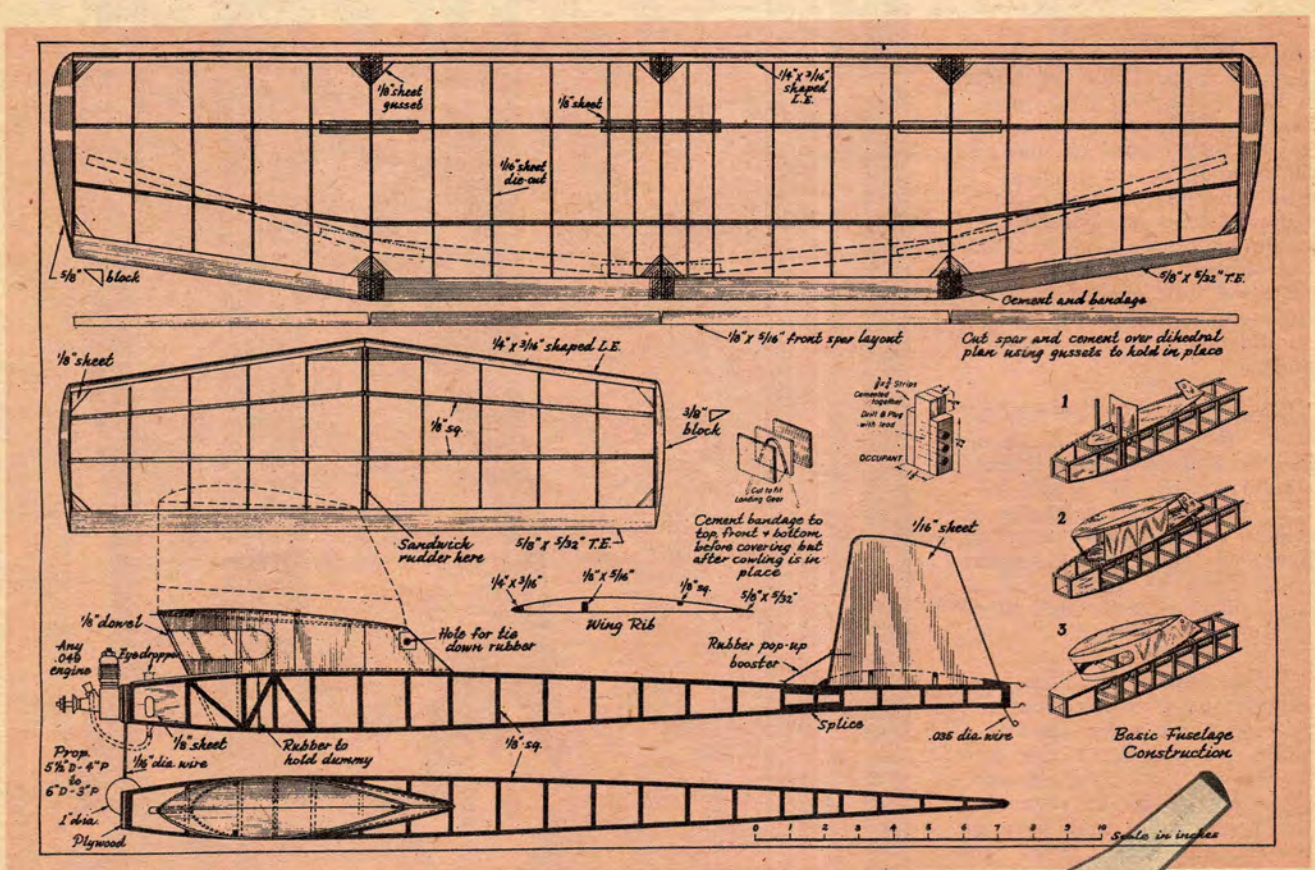
The *PAA Master* is designed strictly for the PAA Load Event and must always be flown with the dummy, otherwise it will be out of trim. Most of the design effort was put into getting as low a sinking speed as possible. The glide is slow and flat, and the model floats with apparent ease.

The low sinking speed was obtained by a combination of streamlining and increasing the wing area. The fuselage was made as slim as possible with a short streamline pylon type of cabin for minimum "wetted" area. Increasing the wing area meant a lighter wing loading and the ratio of wing lift to fuselage drag improved. A pointed leading edge is used in the wing to reduce the profile drag.

A well-broken-in engine should be used, because there is generally a difference of two to four thousand rpm's between a new engine and one that is broken-in correctly. An engine is considered broken in when it will hold its peak rpm's without a falter.

A 5½/4 or a 6/3 propeller should be selected. It is very important to have the propeller balanced to get best performance. Otherwise there is a lot of vibration and the fuel may get full of air bubbles. Balancing a prop is easy. Insert a dowel in the propeller and place the propeller between two razors. Scrape the heavier end of the propeller with a razor until the propeller is balanced.

—JOHN ZAIC



MODEL PLANE FORUM

Got a question? What modeler hasn't! Then let Air Trails' Experts Advisory Board supply the answer. The Board is made up of outstanding model flyers who can supply answers to almost any question on models and modeling. No matter what your interest: radio models, scale jobs, control line speed or stunt, rubber endurance or free flight, we'll do our best to assist you by answering all queries.

QUESTION: Could you tell me about how much room I would need to fly an .049 free flight sport plane?

Nishan Avedikian, Norfolk, Va.

ANSWER: Quite a few fellows have flown Half-A sport models in ball parks on 10 sec. engine runs, with no wind, but even this is too small with a good flying model. A quarter-mile-long field would be excellent providing you are careful by keeping upwind and the engine run short, 10-15 sec.

QUESTION: I'm building a scale P-40F, and I would like to know if I could paint it a dark color, besides olive drab, and yet have it true to scale? If so, what markings would I use?

Fred Archer, Dayton, Ohio

ANSWER: You can paint it either an olive drab or an aluminum color with black anti-glare patch on the front topside of the fuselage, if you want to represent the P-40F as a military aircraft.

QUESTION: How did the Air Force get started on its model airplane contest activity?

Stuart Johnson, Lowell, Mass.

ANSWER: At the 18th National Model Airplane Championships held at Olathe, Kansas, in 1948, Lt. Harry G. Vogler, Jr., one of the senior contest directors of the Academy of Model Aeronautics, was a guest official. At that time, he was assigned to the 3499th Training Aids Wing, and stationed at Chanute Air Force Base, Illinois. Lt. Vogler had been operating contests at Chanute and dreamed of an Air Force program that would reach the magnitude of the National Model Airplane Championships. In 1949, Lt. Vogler returned to Olathe with an eight-man team as a semi-official Air Force Team, and again served as a guest official.

In 1950, Lt. Vogler appeared at Dallas as an observer and again expounded his ideas on an Air Force Program. In late November, he was called to Washington, D.C. to discuss an Air Force Program, and thus came into actuality the Air Force World-Wide Model Airplane Championships.

To implement this program, it was necessary that a great deal of long-range planning be initiated. Along these lines, a base elimination was established at Sheppard Air Force Base, Texas, where Lt. Vogler was then stationed, followed by the Air Force's '51 Air Training Command Model Airplane Championships and World-Wide Model Airplane Championships.

As a result of the efficient operation and the interest shown in the initial Air Force World-Wide Model Airplane Championships last year, the event has been designated as a part of the Hobby Shop Program for the Air Force; and the world-wide competition received an early green light for 1952. The dates are set for 9 through 15 July and the location is to be Amarillo Air Force Base, Texas, and Lt. Harry G. Vogler, Jr. has been designated as the Air Force Project Officer for the second year of its operation.

The program for 1952 has been expanded to include three Rise off Water events, Radio Control and Combat events. A new method of scoring for points has been initiated whereby the top man is given the number of points in accordance with the number of active contestants he defeats; that is, should there be twenty-five active contestants in an event, the top man would receive twenty-four points, one for each defeated contestant, while second-place winner would receive twenty-three points, and so on down the list.

The first Air Force World-Wide Model Airplane Championships established five perpetual trophies. One is the Air Force Trophy to be held by the winning Command for one year, with each member of the team receiving a plaque to show that he was a member of that team. Air Training Command is the present holder of above trophy.

The Cleveland Perpetual Trophy for Built-up Scale Excellence, awarded by Cleveland Model Airplane & Supply Company, is held for one year by the AF Command to which the winner is assigned. Ogden Air Materiel Command is the present holder; the trophy was won by Capt. Pelham Burnett of Ogden Air Depot, Utah.

The Lou Andrews Perpetual Trophy for Class A-B Stunt is held for one year by the AF Command to which the individual winning the event is assigned. This trophy was won by Strategic Air Command's representative, Pfc. Ronald Kambstead.

The Paul Guillow Perpetual Trophy for the Meet High Point Winner is to be held for one year by the AF Command to which the winner is assigned. In 1951, this trophy was tied for by Cpl. Al St. Clair and Pfc. Tommy Baker, the former assigned to Air Training Command and the latter a member of the Military Air Transport (*Continued on page 79*)

Top team at the 1st Air Force World-Wide Championships was this group from Air Training Command. Lt. Gen. R. W. Harper makes presentation. Lt. Vogler (see text) is left of trophy.

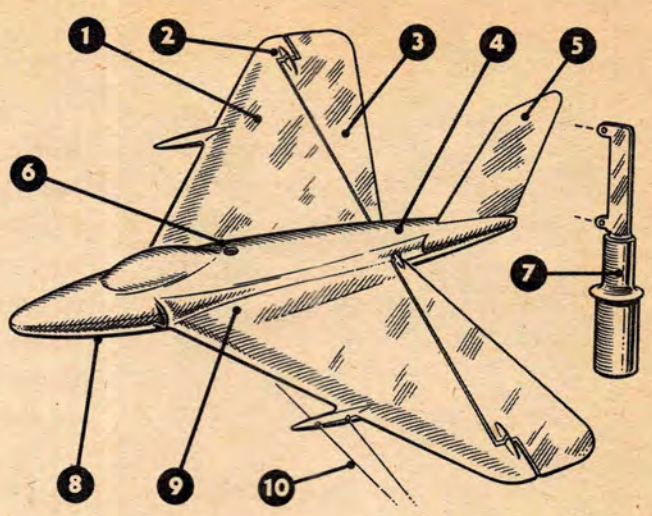
Ready-to-Fly

Wen-Mac Aerobat

■ More and more kit manufacturers are coming to the conclusion that the beginner is a good fellow to cater to, for if he successfully passes the beginning stages of model aviation, he is a fine prospect for more advanced products. But how about the "pre-beginner," the youngster who hasn't even tried model aviation yet? One organization that has concerned itself with the needs of this group is Wen-Mac Corp., of Culver City, California. Readers have probably seen the *Aeromite*, marketed successfully for some time by the firm; it's a completely assembled control-line plane which comes in a large box, with motor and all. Made of high-impact plastic throughout, it is capable of taking a terrific beating at the hands of inexperienced flyers.

Widely advertised and distributed, the *Aeromite* is a potent force in successfully introducing to model aviation scores of uninitiated prospects. However, it has an engine, which means it isn't suitable for the really young enthusiasts, unless Pop or other older hands are present. Wen-Mac felt that by eliminating the powerplant they would have a ship usable by all ages. This brought about development of the *Aerobat*, another tough all-plastic model. Of really modern lines, this tailless job is propelled solely by human power—it is a "whip-power" plane.

The *Aerobat* comes completely assembled; all you have to do is attach the control handle and lines—then fly. Of gleaming black material, the ship resembles a twin-jet fighter of up-to-date design. There is a regular U-control bellcrank, connected to the elevators by the usual pushrod. The fuselage is held together with a single machine screw, upon which the bellcrank pivots.



1. Tough, smoothly molded plastic composition. 2. Integral molded hinges. 3. Hinged plastic control surfaces. 4. Fuselage top integral with wing. 5. Offset plastic fin. 6. Main tie-down bolt. 7. Pivoting plastic control handle. 8. Removable lower fuselage shell. 9. Walker "U-Control" system. 10. 8-ft. radius non-metallic lines.

Elevators are of ample area for fast response and are hinged at three points.

The control handle is of a novel design; you can use it as a normal handle, with the flyer turning around in the circle as he sweeps the plane around, or, the pilot may hold the handle by the bottom portion which is pivoted and allows him to stand facing in one direction, swinging the plane around over his head.

Sufficient nonstretching control line is provided to fly the model at a six to eight foot radius. Flying is counterclockwise and rudder offset is used to keep the plane out at the end of the lines.

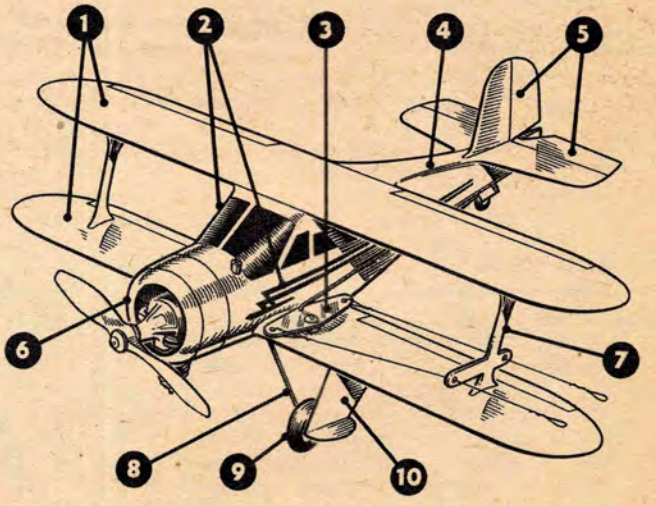
Kit Preview

Scientific Beechcraft

■ Although this *Model 17 Beechcraft* is labeled by the maker merely as "semi-scale," it seems a lot more realistic than some ships designated *absolute* scale. The Beechcraft 17 was a most unusual-looking ship with its well-cowled engine, reverse-staggered wings and general appearance of speed. It was, of course, a really hot ship for its day, and this Half-A kit by Scientific Model Airplane Co., Newark, New Jersey, certainly captures the look of ruggedness and speed.

Scientific has sold a larger Beechcraft kit for a number of years, one intended to handle A and B engines. Their new offering is a true prefabricated kit, and even though it produces a realistic scale biplane, is so simple it shouldn't worry the rankest novice. When you open the box there is no forest of sticks, sheet and so on. There are actually only five main wood pieces—two equal size wings, the fuselage block, a die-cut balsa sheet of tail surfaces, etc., and a die-cut ply sheet.

Much of the very realistic look of this model comes from the formed metal cowl included in the kit. A plywood firewall is provided for engine mounting; radial type engines are simply screwed to this ply piece. The cowl then slips over the engine. The latter is intended to be inverted, which also aids in the neat appearance. The firewall is punched for passage of the fuel line, and for three mount screws to hold a Cub engine.



1. Fully shaped balsa wings. 2. Ornament, trademark and window decals. 3. Completely formed control system. 4. Fully shaped, hollowed balsa fuselage. 5. Die-cut tail group parts. 6. Formed metal engine cowl. 7. Die-cut plywood struts and firewall. 9. Formed gear. 9. Composition wheels, metal bushed. 10. Die-cut fairings

This kit, as we have mentioned, should suit the novice perfectly, for the finished plane is simple and rugged. However, the experienced builder will immediately see possibilities in it, too. With the use of celluloid cabin windows and windshield, a little extra attention on such details as wing wires and a finish based on several good coats of balsa filler, you could easily have a Beauty contest winner!

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Dope Can

News, Views, Comments and Photos from Model Clubs and Enthusiasts in U. S. and Overseas

■ We'd like you to take a good look at that picture above. It shows the first in a series of modelplane demonstrations and talks in the Ottumwa, Iowa, schools held as a part of the industrial arts program. The demonstrations are being sponsored by a model distributor, the Dealer Hobby Supply Co.

This particular session was devoted to a discussion and demonstration of radio-control modelplanes. At left is Bob Williams, at right Claude McCullough, both of Ottumwa, and both R/C participants at the last Nationals. The principal of the Lincoln School where the meeting took place, Ralph Wederquist, is behind McCullough. Students from the Lincoln and Horace Mann schools are shown in the background.

Now what's so particularly significant about the affair? Plenty. It's the opening gun in a program designed to stimulate widespread interest in the hobby field. Instead of waiting around until somebody else took the initiative, Robert Hallgren of DHSCo, felt the place to begin was on the local level and that a program carried on in the community's schools with the approval of school supervisors would be especially valuable.

The idea of talks in the schools met with immediate approval by officials—proving that what you may think is impossible can easily turn out to be just the opposite. The Ottumwa school superintendent gave the plan his blessing with, "I thoroughly approve the idea of local business firms presenting programs of interest to the students, and I hope that others may follow this series."

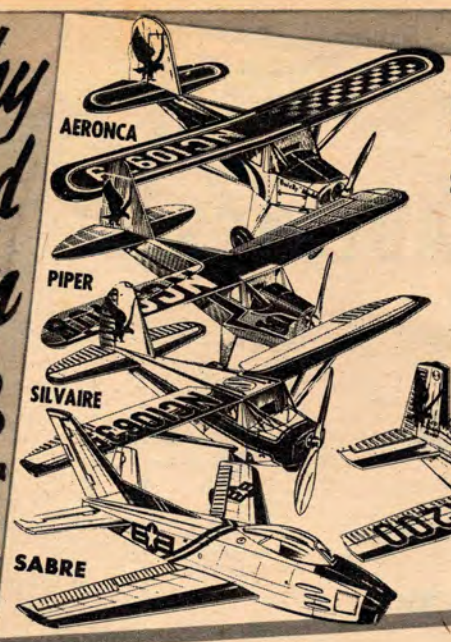
There's no need here for any editorial comment. This is a wonderful idea and should produce many interested modelers. We extend our congratulations to the far-sighted school folk of Ottumwa who realize an interested student is a better student. And to Bob Hallgren—a hearty "well done." Let's hope, Bob, that lots of other folks in the modelplane business will follow your lead.

Do' No' vs. Powavan. Our old friend John Schneider of Scotia, N.Y., was among several keen-eyed experts who wrote regarding the similarity between the AT Air-Model Design free flight winner "Do' No'" and the English free flight kit "Powavan" put out by the Frog folks. We asked Don Hambly about this. He's the chap who won the contest.

"When I started the design of my model," reports Don, "I was trying to develop a model (*Continued on page 73*)

Love that club! The Beacon, N. Y., Air Trailers have been together 4 years and still going strong.

Here's Why Cleveland Is Tops In PREFAB SCALE



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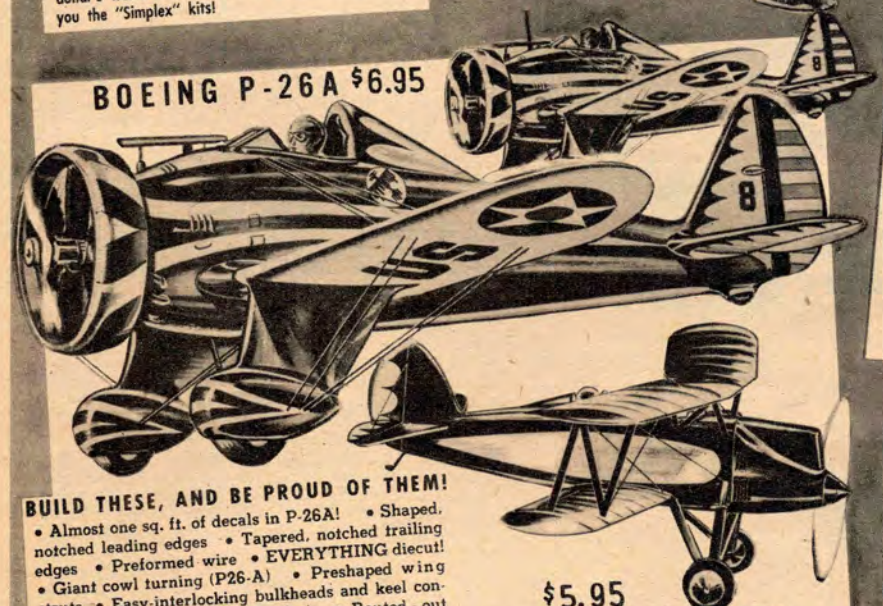

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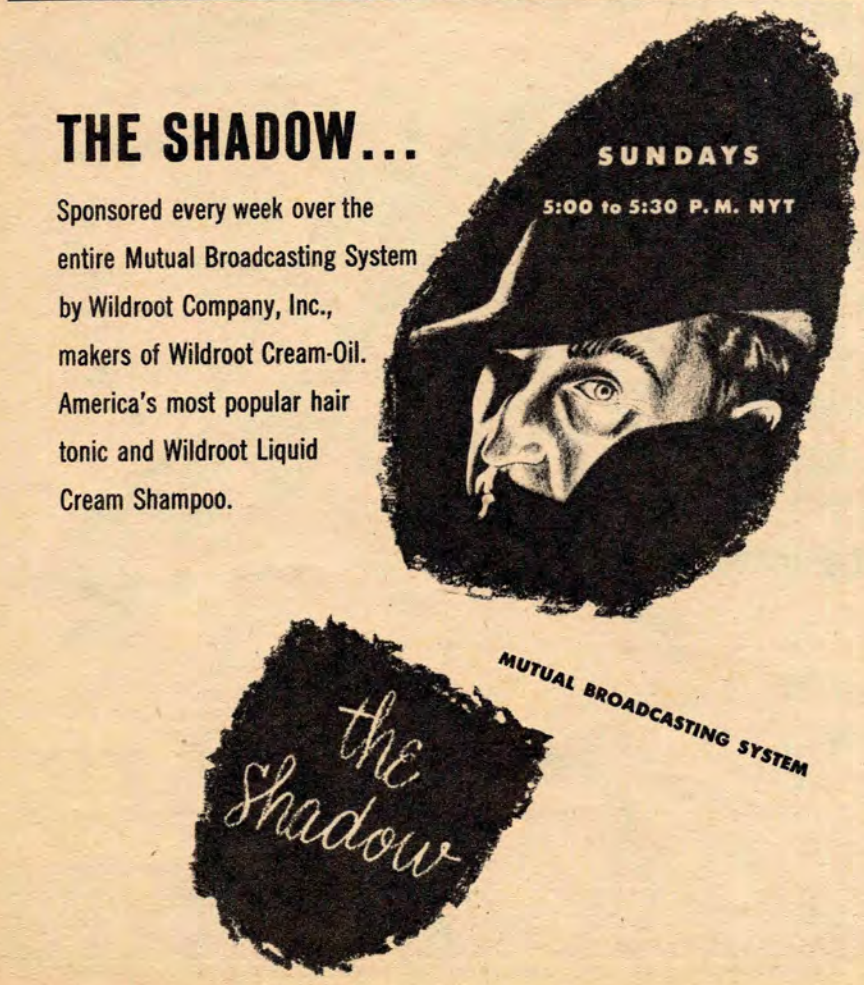
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Thermal Thumbed To Kansas

(*Continued from page 23*)

the wings are located the dive flaps used to increase the drag of the sleek ship so that one can decrease the glide angle for landings and dives. With these exceed 130 mph even in a vertical flaps full open the airspeed will not dive.

The fuselage is conventional for high-performance sailplanes built of laminated spruce bulkheads, spruce stringers and covered with mahogany plywood. In order to reduce drag a landing skid was used instead of a wheel.

The tail surfaces are constructed of spruce and plywood with fabric covering. The weight of the ship is 487 lbs. empty, of which the wing alone is 346 lbs.

Three test flights were made before I entered the R-J-5 in the National Contest in 1950. It flew well enough to win but its drag was still higher than it should be. The glide ratio then was 31 to 1.

By careful flight testing, measuring and modifications at Mississippi State College during the next eight months, Dr. Kaspet and I were able to reduce the drag appreciably. The glide ratio increased to 40 to 1 and the minimum sink decreased to 1.7 ft./sec. Now it was in shape to strike out for the distance records.

First came the 1951 Contest in Elmira, New York. The R-J-5 was flying beautifully now, gliding flatter than seemed possible. The best flight was 360 miles to Norfolk, Virginia, for a new national record. We were getting closer —only 105 miles short of the Russians.

It is well known that for strong thermals and long soaring days, the semi-arid country of west Texas is as fine as anywhere. Therefore Odessa, Texas, was chosen as an operating base for a summer soaring expedition, in which some eight sailplanes participated.

A local familiarization flight at Ector County Airport was made, then came the watching and waiting for the right kind of weather that one must have for a long distance flight. Unfortunately no weather maps were available there but we could get teletype sequence reports by telephone from nearby Midland Airport.

July 28 looked as if it would be worth a try. The tailwind was about 15 mph at altitude and the thermals had been good on the previous day. We installed the barograph in the R-J-5 and soon towed into the air behind the Stearman.

The day was good but by noon the tiny cumuli had grown into large thunderstorms. This made quite a number of detours necessary and my cross country speed was not as good as hoped. Still, I was quite happy at having covered 403 miles for another national record.

I wanted a better day and another crack at that World's Record, so again we waited and watched the skies. On August 3 the weather improved. Cumulus clouds started to form before 9 A.M. but they were very low. The air seemed moist and I feared thunderstorms would form again, so I waited. Strangely enough not many did form that day. On the 4th, the air was drier and the south wind increased in velocity. Unfortunately I couldn' fly because I had volunteered to drive Shelly Charles' car and trailer deep into New Mexico to retrieve him. He flew his beautiful Weihe 348 miles on the 3rd, the day I thought was no good!

As luck would have it, August 5 turned into a beautiful soaring day— at least the kind that I like. By now the air was very dry and clear. The wind aloft was 20-25 mph from the south.

Quickly we installed the barograph in the sailplane and pushed it to the

end of the runway. We decided to take off early, tow to two thousand feet above the three-thousand-foot-high airport, and then level out the towplane at that altitude until the ground heated up enough for the thermals to boil off. Thus I would have as long a day as ordinarily possible.

When the Russians established their speed record in 1938 they artificially increased their gliding time by aero towing to 23,000 feet early in the morning. It meant that they could glide for over two hours straight before it became necessary to find thermals. Now this did not seem to be very sporting to us in America, and we wanted not only to exceed their record but to do it from an ordinary low tow.

So off I went behind the Stearman at 10:16 A.M. The air was still smooth. By the time we reached 1400 ft. I suddenly realized that in my haste I had neglected to turn on my barograph recorder, without which no official records are granted. Quickly I released, opened the dive flaps and slid into a landing at the airport much to everyone's bewilderment.

The second take-off was made at 10:29 A.M. and at 2100 ft. I released in a weak but satisfactory thermal. I spiraled in this lift and slowly climbed at 150 ft./min. to 6500 ft. A.S.L. My cruising speed chart, which is a curve of most efficient indicated airspeed vs. indicated rate of climb in thermals, showed that now with the stronger lift I should cruise 70 mph between thermals.

At 11:49 I arrived high over Cedar Dry Lake. Checking the distance and time on my maps, I found that the ground speed had averaged a lovely 65 mph from the take-off at Odessa.

Things went along nicely until I arrived over Lubbock at 12:45 P.M. Here my nice companions, the cumuli, ended. About 30 miles to either the east or west, they went on endlessly to the north but here there were none for ninety miles. I decided that to make a detour either east or west would cost too much time—if I wanted to go 500 miles that day. I had confidence in the high glide ratio and low sink of my sailplane, so out we went into this void area.

Soon I noticed dust devils tearing at the dry Texas soil below. Since they were usable thermals, I felt much better about crossing that area. The lift was not quite so strong but the R-J-5 soared on beautifully.

At 2:08 P.M. I again was back in the cumulus cloud area at Canyon.

The upper air winds that I had received that morning, at Odessa, showed strong south winds between the ground and 8,000 feet above sea level. So I now decided that my groundspeed would be better if I did not climb above this altitude in the thermals, but instead leave them at 8,000 feet, and cruise on to the next. Also, as is my custom, I did not bother to climb in weaker thermals but utilized only the stronger ones.

This worked well but near Amarillo I had passed up a number of weak ones and soon found myself only 1800 ft. above the ground. There were two small dust devils about two miles on both the east and west of me, but I did not want to waste time by going off course to one of them, so on I went looking for something downwind. Now the altimeter said 1600 ft. and still no lift. I thought to myself, "This would be a sad way to end my 500 mile record, only halfway there." I was ready for any lift at all. Soon another small dust devil started churning a couple of miles to the south. This was costing me distance and I knew it, but I had to stay airborne at all costs, so back I went.

Only 1400 precious feet of altitude remained when I got there and the thermal was weak but at least we were going up again. Tightly I circled around and around slowly, getting back my safety of altitude. I calculated that my ground speed had averaged only 36 mph for the past twenty miles. Couldn't afford to do that again—had better

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Area	70 sq. in.
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JUNIOR AERONAUTICAL SUPPLY CO. 203 E. 15th St. New York 3,

stay high and safe.

At Amarillo the winds shifted to the southwest. This meant that I had best abandon my goal of Colby, Kansas, which is 527 miles straight north of Odessa, and just try for all the distance I could get.

At 3:05 I arrived over Borger, Texas, and looked down at the two large black carbon plants from which erupted a continual blast of black smoke that extended in columns to the cloud above. It was here that I found the strongest lift of the day. The average rate of climb was 630 ft./min. according to my barograph recording. From the cloud base at 12,500 ft. I cruised on at 80 mph now.

At 4:05 I crossed the Texas-Oklahoma border. Shortly afterward the thermals took me to 13,000 ft. A.S.L. on two occasions. The cloudbase was slightly less than this but I wanted to see the altimeter read an even thirteen, so I lifted the nose of R-J-5 slightly into the base of the cloud, then pushed it down into a dive and leveled out on course again.

By now I had 365 miles from Odessa and was some two miles above the ground. It was 4:30 P. M. and I did not know how much longer the thermals would keep going. I thought, "If I slow down to the best glide ratio speed, 50 mph, with this tailwind I could safely glide beyond the 465 mile mark even if there were no more thermals. However, it would be foolish to fly so slow if good lift is available, as it appears to be." Therefore I used a compromise speed of 60 mph.

At 4:55 I crossed from Oklahoma into Kansas. I now felt that I had enough altitude and distance to exceed the Russian record. The cumulus clouds were beginning to disintegrate but there were some good ones near the Arkansas River east of Dodge City. This was sixty miles away, so I slowed down to my best glide ratio airspeed and slowly ground off the miles. With the help of two very weak thermals I arrived there with 9,500 ft. A.S.L.

These large cumuli were rather odd in that they continued in an almost solid line as far as the eye could see toward the northeast. Their tops must have gone close to 20,000 ft. It looked like a weak cold front or a line squal.

The first and last lift I found was at the southwest end of the line but it was only 150 ft./min. Slowly I climbed. I was 11,000 ft. A.S.L. when my patience ran out. I reasoned that since I was under the first cloud of the line, and it was small, then farther along where the large cumuli were the lift must be stronger. Therefore I left my weak thermal and went swiftly on my course expecting to find all kinds of lift under the cloud street. I had visions of flying straight ahead at 70 mph, not having to circle for altitude until darkness would force me to descend and land at some far-distant airport.

answer the call

1952 RED CROSS FUND

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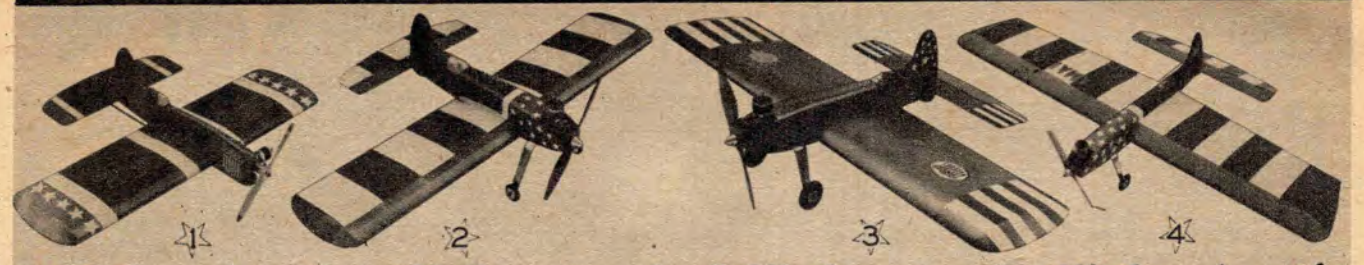

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WILLIAMSVILLE, N.Y.

Unfortunately this was not the case as I found only three places where there was just enough lift to bring the rate of sink to zero. No use circling in that, nothing would be gained.

It was 5:55 P.M. when I left that last thermal southeast of Kinsley and started what I soon realized was my final glide. When I found no more lift I slowed R-J-5 down so that its long slender wings could carry me just as far as possible.

I looked at the map. Salina, Kansas, was on course but an impossible 110 miles away.

At 6:15 P. M. I was southeast of Larned. The air now was as smooth as glass. "Better start calculating where to land," I thought. "The closest airport at Salina is Sky Village and its elevation is 1270 ft. I now have 7,950 ft. above that and it is 79 miles away. Wow! that would take a glide ratio of 52.5 to one if I was going to get there for a downwind landing!"

Hopefully I held the airspeed exactly on 50 and kept the ball bank carefully centered. I crossed the Arkansas River and finally arrived over the town of Geneseo at 6:55. "Let's check again and see if I am going to make it. Still 29 miles away and Salina is not yet visible in the early evening gloom. The altimeter shows 3,600 ft. above the airport." Now all that was necessary would be a 42.5 to one glide ratio. Hurray! The R-J-5 was going to get me there yet.

Not caring to trust a compass course, I lined up on a reservoir some ten miles distant, beyond which my airport should lie.

The altitude slowly slipped away and the ground seemed to be getting uncomfortably close. Soon I could see Smoky Hill airbase to the right of my course, therefore Sky Village must be well camouflaged but just ahead. Sure enough, soon I was over it with a thousand feet to spare. My ship had actually glided 57.5:1 for the last 79 miles, with the help of a tailwind.

No one was in sight on the ground except a few automobiles on the highway.

I circled the field twice to attract attention and then slid into a landing amongst the weeds that grew on the runway. From among the houses out came a jeep with two men—good, since I needed landing witnesses.

Quickly I explained. We measured the distance on the map and found that we were 545 miles from Odessa—Happy Day! I had thermal thumbed to a record.

R/C

(*Continued from page 10*)

Claude McCullough writes from Ottumwa, Iowa, of the R/C meet at Ames last fall. It was won by Paul Johnson (as usual, says Mac); 2nd, Don Barron; 3rd, McCullough; 4th, Jack Williams; 5th, Mac McCoy. McCullough's four-wheel ship (see p. 41, Jan. '52 A.T.) has been divested of the two rear wheels and other complicating features to reduce weight, but his new ship will have *five* wheels! No ground loops with this one. Jack Williams and his wife, Billie, are each building a Foxworthy "Half Shot." We assume this is the miniature Hoosier Hot Shot Gene had at Dallas in 1951.

Q & A. Enrique Casta, Box 277, San Isidro, Cal., asks if he can get 4 movements of rudder and elevator with one trans. and rec. Sure can, and the best way is by audio tone control as perfected by E. L. Rockwood of Walnut Creek, Cal. Jim Walker does it with a special motor driven selector and has engine speed control besides, all with one R.F. channel (no audio used). His equipment is not on the market now, but may be later.

Clifford Gu, 786 Bush St., San Francisco, wants to know how old he must be to get an amateur license. There is no age limit whatever—you just have to know the code

(*Continued on page 59*)

You asked for more . . .
Here they are . . .

Nylon Nylon Nylon

Ever since the first nylon accessory was offered model builders, nylon has become the most popular material to hit the field in ages.

Tested first in the factory, then by leading model builders all over the country, the results were unanimous . . . "Give us more!" And when production finally started to roll, and nylon got on the dealers' shelves, modeling enthusiasts all over took up the cry, "Give us more!"

And no wonder these remarkable new accessories have been so popular. (If you've tried the new ½ A handle and control plate, you'll know why.) These two items were introduced first because they were the toughest to make. If they held up, anything else nylon would be sensational. And as you know, the first nylon accessories not only held up . . . they surpassed the dreams of all model builders.

And now we have the next accessory in our line ready . . . already on your dealers' shelf . . . nylon wheel collars.

Here is an accessory you can't afford to miss. Easy to use . . . just push in place with a simple push of your finger. Yet nylon wheel collars give a safe, positive locking action that defies accidents! And think of it . . . they're only 4 for 15¢!

Keep looking for better things in nylon. Available soon will be a line of ½ A unipans, unicowls, super detailed bubble canopies, and a snap-on spinner that's incomparable . . . no nuts, no bolts, no gimmicks to hold it on. Simply a positive snap-on grip. Truly shock absorbing action in case of crack-up.

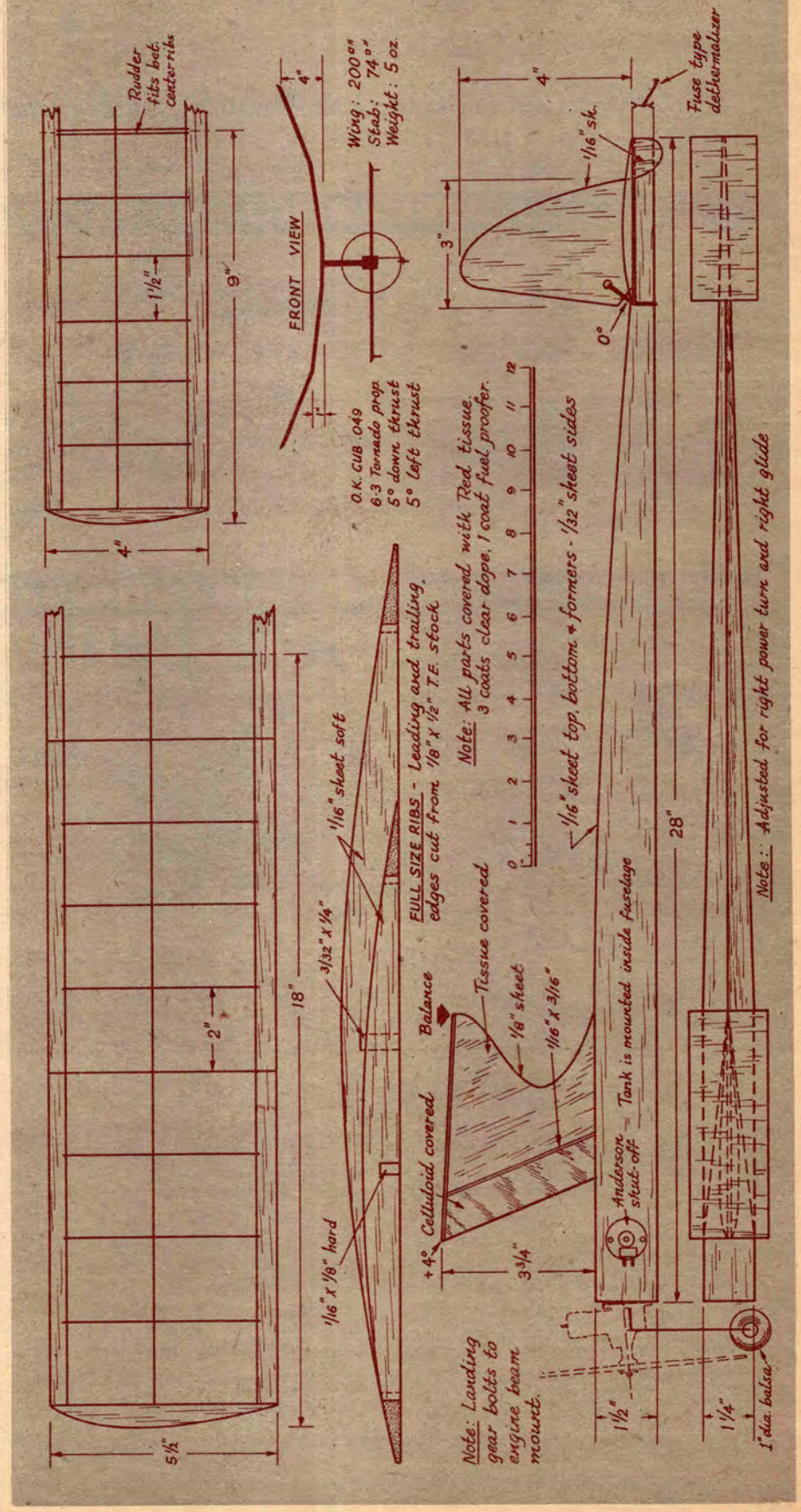
Yes, keep your eye on nylon . . . for the best is yet to come!

Accessories of Dupont Nylon are made exclusively by Sullivan Products, Phila., Pa., manufacturers of PYLON BRAND wire and accessories.

advertisement

RECORD REVIEW: Half-A Free Flight

As an example of what we might expect when a noted indoor builder turns to gas flying is this remarkable Half-A record-holding plane by Anthony D'Alessandro of Philadelphia, Pa. The "reversible" wing and stab are the same "coming or going" except for the spar and the tips.



(Continued from page 57)

and the answers. Boys *and girls* 10 yrs. of age have obtained licenses.

Marshall Sherrill, Jr., 635 N. Highland Ave., Arlington Heights, Ill., wonders if XFC-1 is interchangeable with RK61. In general it isn't; circuit values have to be changed in many cases, antenna coupling altered, etc.

Bill Jackson, 260 Cortez Rd., Palm Springs, Cal., wishes to know where and at what price he can get an R/C outfit that can be operated legally without ham license. The only one now on the market is Citizenship equipment, sold by Vernon C. MacNabb Co. of Indianapolis. Some hobby shops can also supply this apparatus.

W. J. Thelen of Milwaukee wonders where to get a diagram of the Citizenship set. He will find it in the Sept. '51 issue of QST magazine, part of a fine 2-section article on R/C equipment written by Bill and Walt Good.

Technical Notes. Just about the time you read this the Air Trails Annual will be published. This contains lots of hot model plane material, of course, but of special interest to R/Cers is an article describing construction of a simple transmitter and receiver for 27 mc. use. Trans. uses single 1S4 tube and batteries, is crystal-controlled for Novice Licensee use. Rec. has an XFG-1 which tube works beautifully on 27 mc. Best of all, the two units may be shifted easily to the proposed R/C spot on 27.255 mc., if and when authorized by the F.C.C. Don't miss the Annual.

An article by your Conductor in the Sept. '51 issue of Radio and Television News described a complete proportional control R/C system very thoroughly. One item included in this article is a 3-tube (all hard-hearing aid tubes) receiver we have been using for some time. Several correspondents have written us they have tried the receiver with gratifying results. We don't mention this with the idea that the receiver is the last word; it *does* work nicely, though, and should be a good starting point for further experimentation. If any readers have tried it, let's hear of results.

Since RK61's have been unavailable for so long (see Commercial Notes, however), everyone is experimenting with multi-tube receivers. Colby Evatt of the Los Angeles Radio Controllers has had good results with such a job (using two 1V5's or 1AC5's) in a D.C. amplifier circuit. He also has a single tuber using the same type tubes that gives about .9 ma. plate current change on signal, and appears to be much more sensitive than the usual RK61 rigs. John Curry of the same club is working with Stevens-Arnold resonant reed relays in an audio tone set-up.

Jim Schenck says that thorough tests have convinced him a ship with slow-running engine definitely drops faster than the same plane with engine stopped. These tests were made with the 2-speed arrangement detailed in this column last month. Jim has embarked upon an ambitious winter project; he is building a Rudderbug of about 9' span, which is expected to weigh 8 or 9 lbs. fully loaded. Main load will be a stripped-down 8 mm. movie camera to be radio-actuated. Now *this* we want to see!

Commercial Items. It will be welcome news to some flyers that RK61 tubes appear to be available again. Control Research, P.O. Box 9, Hampton, Va., recently got a partial shipment of these long-gone tubes. Control Res. can also supply full size plans for the Rudderbug, with photos, cutaway drawings, details of proportional control or escapement installation, radio fitting, etc.; price is $2.75.

The English E.D. R/C line will be sold in this country by Polk's, 314 5th Ave., N.Y.1, N.Y. The line includes ¾ oz. double-winding 2-arm escapement with current-saving feature, 3A5 transmitter, and a 1¾ oz. XFG-1 receiver in a tubular case that is small and practically crashproof. The entire outfit costs $39.95. The E.D. concern recently ran a 5 ft. long model yacht across the English Channel from Dover to Calais, steering it entirely by R/C from an accompanying boat. Driven by a special E.D. water-cooled diesel engine of .276 c. in., the boat traveled about 32 miles in 8½ hours. Radio equipment was a new E.D. Mk 4 audio tone outfit using resonant reeds.

The bad news comes from Radio Control Headquarters, Deal, N. J., that their plant was destroyed by fire. All records were lost, of course, and R.C.H. requests that those with equipment on order please write them at P.O. Box 178, Belmar, N. J.

American Telasco Ltd., 55 W. 42nd St., N. Y. 18, expects to market a hard-tube receiver (single 3S4) soon. Price about same as their XFG-1 receiver; latter will still be available. They will also have a transmitter kit, complete with ant. but no case. "International" trans. will be retained (no kit on this) but other transmitters in line dropped.

(Continued on page 61)

a "SPITTIN' IMAGE" model by Monarch

FOR ALL HALF "A" ENGINES — .045 to .099
WINGSPAN — 20 in.
COMPLETELY PRE-FABRICATED

Hard to believe? Certainly! But these are actual unretouched photos of Monarch's great new SPITFIRE model. Like the Curtiss P-40F, the first of the SPITTIN' IMAGE models, this control line version of Britain's fabulous fighter is truly a marvel of precision PRE-FABRICATION. For outstanding craftsmanship; for ease of assembly; for eye opening appeal — nothing can equal this; excepting other models by Monarch. The contents are truly lavish — a bubble canopy, of course — huge decal sheet — enormous illustrations, etc. See this greatest of Spitfire models at your dealer now.

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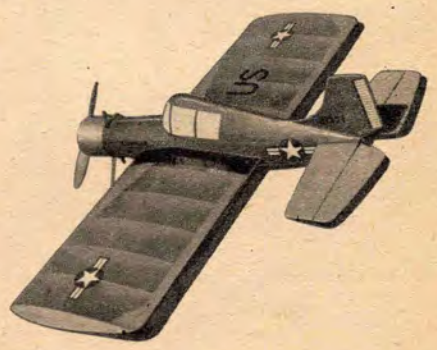
Toshi Matsudi gets off his super-gorgeous "Zeek" in true unassisted form from rough platform.

■ This past month was a very busy one with a contest every Sunday. One meet was a two-day affair so all in all we did a lot of traveling and saw quite a few models flown. We missed one because of the arrival of a new son, Patrick, who will undoubtedly be flying models as soon as he is big enough to build.

The one we missed, the two-day Bakersfield Semi Annual, was covered by Russ Johnson—that Wakefield Committeeman who handled the West Coast Eliminations to everyone's satisfaction last year. Russ reports that on Saturday the weather was quite variable, overcast till 7:00 A.M., clearing and windy till 2:00 P.M. Then calm and warm (it always is in that valley). Skip Fattig won towline, a junior by the way, with a total of 11:24, flying a stock Floater with sheeted fuse, wing and tail silked, then covered with paper, kind of unusual with that covering.

The ship was quite heavy, weighing 23 ounces. Jack Oxley (the gas man) flew a fifteen inch span, hardwood fuse glider to first in hand launch with 10:33. Bill Butler (not the R/C man but a member of the Hi Tailers—Russ plugs this) flew a slightly modified "Salisbury" stick model with three panel dihedral, freewheeler and all to first in the rubber event.

On Sunday the real flying weather opened up, a little overcast but warm and very little wind. There were six scheduled events which allowed one to fly as in a little Nationals. Some fellows, like Fran Uyematsu, were very busy indeed flying in as many as four events. Fran seems determined to become a modeler who makes himself heard when it comes to winning contests, as his very good record attests. We don't know where he finds time to build all those models but he shows up at every contest with a number of new ships. At this one he came out with a modified Zeek Class A payload model by including a bubble in a front raked pylon. His Cumulus was one which Carl Goldberg could be well proud of. The fellows stood in open-mouthed amazement when this ship climbed, since it was almost out of sight when the engine stopped on its official flights. A Torp .19 and plugged .29 provided the power to go upstairs like a streak.



New stunt model by Cliff Potts. Power is a Torp .29. Features very thick wing section covered with silk. Much semi-scale realism.

Bob Upton, Jr. (ex-Detroiter) calls this stunt model "Firecat". Powered with an Atwood Champion. Span is 44 inches, weight 3.5 lbs.

Bill Butler and Jack Oxley also put in a very busy day only to have that perennial "almost," Jack Block, sweep by everyone else, for a change, to win Sweepstakes. If Jack were to win several sweepstakes in a row no one could begin to envy the guy for he has been runner-up more (*Continued on page* 69)

(*Continued from page 59*)

Vernon C. MacNabb Co., 909 Westfield Blvd., Indianapolis 20, Ind., offers users of Citizenship equipment info on retuning receiver, using their transmitter as a signal generator. This valuable data free—write company at above address.

Experimenters with proportional control have experienced difficulty in obtaining disc magnets needed for some forms of actuators. Such magnets, ¾" dia. x ¼" thick can be had from Leotone Radio Corp., 65 Dey St., N.Y., for 49¢ each. This concern cuts and magnetizes alnico, and can supply other special sizes at low prices.

A new style of escapement is available from Bonner Specialties, 1607 So. Bundy Dr., Los Angeles, 25, Calif. Called a Compound Escapement, it was developed by Herb Owbridge and Howard Bonner, and works like this: There is no sequence to remember, you just push your control button once and hold for right rudder, twice and hold for left, three times and hold for motor cut-off. For change in motor speed you give 3 pulses and release. To get the motor operation, an added escapement is required; it is connected to the motor as described in this column for Nov. '51 and Feb. '52. However, the electrical actuating system shown in the Nov. issue is not required; the motor escapement is operated by contacts on the Compound escapement. Latter is now available for $14.95. The motor control escapement fitted for both 2-speed and motor cut can be had at the same cost. Each of these units weighs .8 oz.; they are beautifully made and sure-fire in operation.

To go with the Bonner developments, K&B Mfg. Co., 224 E. Palmer Ave., Compton, Calif., offer a special model of their Torpedo .19 fitted with dual needle valves for $15.95; or, they will fit dual valves to your own Torp .19 for $3.50.

Another well-known English R/C outfit is being sold over here by All American Model Motor Exchange, Box 885, Santa Monica, Calif. This is the Roland Scott "Comet" line, and consists of an XFG-1 receiver with Siemans 73 relay, a 3A5 transmitter, and a 2-arm escapement. The complete outfit sells for $29.95. This concern also sells the E.D. Mk III set, and Citizenship R/C.

—HOWARD G. MCENTEE

Load 'Em Up!

(*Continued from page 44*)

aircraft. For a starter, two-thirds of what you would like to have is an acceptable percentage. But this study also showed that in *all* categories, one vital factor was missing: the PURPOSE of the airplane! An airplane flying just itself is only an amusement without purpose. The purpose of any airplane is to fly through the air carrying a load, whether persons, mail, cargo, or military load. In one word: PAYLOAD. Pan American Airways added PAY-LOAD to Free Flight-Gas and the resulting PAA-LOAD Event brought to model aviation a logical illustration of practical purpose.

There *are* clouded areas where the more you look, the less you see! You hear the wail of many modelers: "We have no place left to fly!" Let Papa glance around at his own community: Tokyo, Japan. Until three months ago, model airplanes were going great guns in these parts. At the Imperial Palace Plaza each late afternoon and all day Sundays, control liners—stunt, speed, and scale—whined away in magnificent merriment. Now the Plaza is quiet, and in the center of the abandoned control line circles stand police department signs saying in both English and Japanese: "No model airplane flying allowed."

At old Matsudo Airstrip on the northeast outskirts of the city, the free flight enthusiasts sent up their prides each Saturday and Sunday. Now, Matsudo Airstrip is also quiet. Did the modelers lose interest and enthusiasm? No, activity at both these places was increasing weekly, right up to the moment the boom fell. At the Plaza the noise irritated many people not particularly fascinated with model airplanes—especially guests at the nearby Teito Hotel. Then a couple of hot ships got out of control and dived into the autos and spectators. The Plaza was closed to model flyers.

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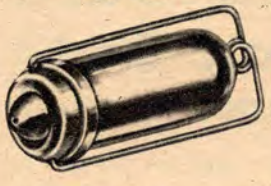
FUEL WEIGHT (MIN.)	.2 oz	.28 oz	.3 oz	.4 oz
TOTAL WEIGHT	.4 oz	.88 oz	1.4 oz	2.9 oz
THRUST (MAX.)	.6 oz	1.2 oz	2.3 oz	4.0 oz
DURATION - ONE CHARGE	12 sec	20 sec	20 sec	12 sec
DURATION - TWO CHARGES	—	—	32 sec	24 sec
DURATION - THREE CHARGES	—	—	—	36 sec
TORQUE	NONE	NONE	NONE	NONE
EXHAUST VELOCITY	1200 ft/s	1200 ft/s	1200 ft/s	1200 ft/s
OVERALL LENGTH	1 5/8"	2 1/4"	2 7/8"	3 3/4"
MAXIMUM DIAMETER	11/16"	1"	1 9/32"	1 3/8"
EFF. WINGSPAN	12-20"	18-30"	24-36"	32-54"
ENGINE PRICE ①	$1.95	$4.50	$5.95	$8.95
FUEL PRICE ②	$ .65	$ .75	$ .95	$1.00

NOTE ①; INCLUDES: ENGINE, ACCESSORIES, MOUNTING CLIP INSTRUCTIONS, FUEL.
NOTE ②; INCLUDES: 10 FUEL CHARGES, IGNITERS, RETAINER SCREEN, SEALING WASHERS.



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At Matsudo, there was a generous area for free flight and inside this area all went well, and stayed well. But the hot performing models wouldn't stay within their generous area; they insisted on climbing straight up and catching thermals that dumped them into crops growing outside the flying area. Searching and retrieving modelers (not so much the models themselves) trampled and damaged crops. A couple of models, with fuse dethermalizers still ablaze, settled down among grass-roofed houses! The control liners are now battling for time on outlying soft-ball diamonds. The next Tokyo free flight contest has been set for an area 85 miles to the north!

When any community concludes that model airplane flying is a public nuisance, contrary to the public safety, economy and comfort, we are through in that community. Terms like the public safety, economy and comfort are a little too broad to grapple with unless we consider what they mean in practical down-to-earth applications:

The public is intolerant of three safety hazards which must be eliminated or reduced: *Collisions by Models.* Modelers must design, build, and fly their planes so that they will not collide with persons or property while under power. This means that while in power flight, the models must proceed upward in a stable climb. *Retrieving Damage.* Modelers must not search for or retrieve their models in such manner as to endanger persons or property. *Fire Hazard.* Modelers must not release any model carrying an "open flame" device of any sort. Sooner or later fuse dethermalizers are going to be outlawed.

The public will not continue to pay the bills for modelers' damage to persons or property, particularly when the damage occurs outside the established flying area. Model insurance protects the injured only if the modeler makes himself known. Too often when the victim discovers his damage, the modeler and the model are gone. People object to uninvited modelers trespassing on their property whether or not any damage is done. The law is already with Mr. Public on these points.

The public objects to the noise nuisance. Here, full-scale airplanes are the worst offenders. But models come in for a share of the blame, especially control liners being flown close in to densely populated areas. During Sunday church services is the prize boner hour. Future control liners are destined to have mufflers, and perhaps slower turning props as well. Free flight is relatively innocent on the noise nuisance count.

So much for the *public*. There *is* substance in their charges and logic in their demands. Either we modelers meet these demands or we will all find ourselves with no place left to fly!

Can modelers meet these public demands and still keep on flying model airplanes? Let's see what many modelers say they want:

First, to keep flying, without having to travel all night to the outskirts of civilization before they can spin a prop.

Second, to keep flying, without losing precious contest time or good-weather hours in searching for lost models or retrieving.

Third, to keep flying, without the costs of lost models, rewards to finders, damaged clothes, shoes, and other personal property expended chasing and searching for models.

Fourth, to keep flying, with enough strength of structure to last awhile, with more realistic appearance, with more precise and realistic performance.

Fifth, to keep flying, within sight, so that the complete thrill of take-off, climb, glide, and landing can be witnessed by the modeler himself.

Sixth, to keep flying, in contests where modelers and their models compete for prizes against each other in design, construction, and flying skill; instead of for thermals.

Seventh, to keep flying, with all this, and still have contests that are reasonably quick and easy to process, and that can be judged with one single,

impersonal mechanical device—the stop watch!

Fortunately, there are technical means, already available to the modelers, which can be applied to give the modelers what they want *and* what the public demands. Each of these technical means has already been tried and proved. Most modelers are already familiar with them.

Here are the technical approaches destined for dust-off and revival:

Shorter Engine Run. This is the simplest and easiest performance parer-downer of all. It can be used for any model now existing. It *should* be used at all contests where present models tend to fly outside of, and thereby endanger persons and property outside of, the established flying area. By shortening the *time* for climb it will clip off the climb at the top, where lurk most of the thermals ready to yank models away from the flying area and dump them outside onto the unwilling public. This method of decreasing performance has the disadvantage of shortening the flight time under power, and of the entire flight. It would teach modelers nothing—would even be detrimental by decreasing the time during which model flights under power could be observed and studied. Even so, it may be necessary until more logical means are accepted.

Increased Power Loading. This will cut the *height* of climb without cutting the time of climb. Therefore, it gives a similar result without the disadvantages. It will also make models easier and safer to control by avoiding the power spin hazard of over-power. It will allow weight necessary to build with more strength and realistic appearance, and to carry mechanical dethermalizers, respectable landing gears, etc. Such models will last longer, and save money on rebuilding and repairs. How much will power loading be increased? Our guess is 50 per cent as the starter, to the formula 1.5 ounces per 0.01 cubic inch engine displacement. That will give empty models slightly less power loading than PAA-Load models have today. In the distant future, power loadings will have to be upped *again*.

Wing Loading Requirement. Another way to say this is "Wing Area Restriction." This will hold down the glide and while emphasizing clean design will assure that more prizes are won by good models and fewer by chance thermals. We have had wing loading requirements before. One reason they were abandoned is that checking wing areas (especially of elliptical and other odd shapes) was such a time-consuming headache during processing. Look for this old friend to return with a quicker and simpler process: Maximum measurement for the total span(s) of the supporting surface(s). In other words,

(*Continued on page* 65)

"Say, this would make good hinges!"

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Theory in Profile

Why bust up a lot of models trying out new configurations? Just follow Fromm's famous method. It sure conserves balsa and glue!

By WALLY FROMM

■ Many modelers look upon the hand-launched glider as the lowest form of model life, and one from which nothing can be learned. With a little ingenuity, however, that low form of life can be a flying test stand for ideas and theories that would take a great deal of time if incorporated in a full-size contest ship. Let me give a couple examples.

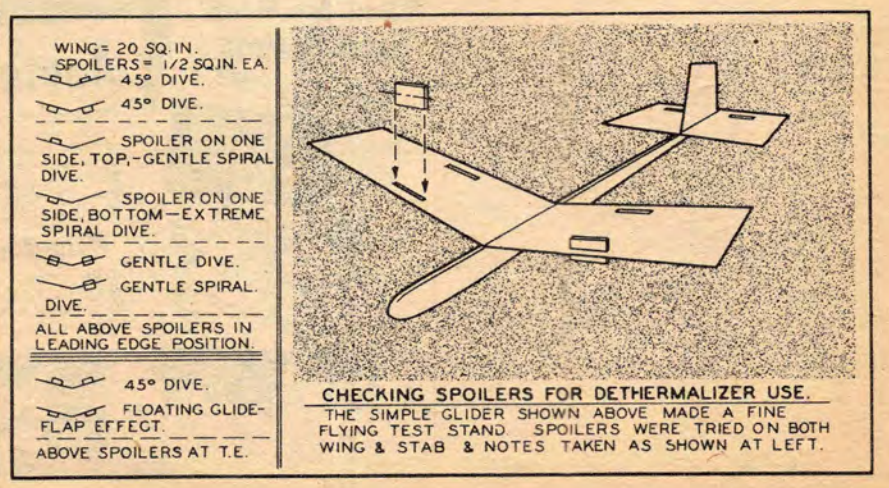
My first series of experiments with various possible methods of dethermalizing was done with a very simple little glider (see sketch) that was hacked out in less than fifteen minutes. I wanted to see just how spoilers would affect a model, and I hit upon the idea of using the glider. The model was balanced, and adjusted to glide straight. This was done in the basement, gliding from a predetermined spot and marking the usual landing spot with a chalk line. Now I knew how far the ship glided when it was not hindered by any dethermalizer.

Next step was to slip the spoiler plates into the slotted wing and glide again from the predetermined spot. That the ship now dove slightly and landed short of its normal spot was quite apparent. Various arrangements were tried—spoilers on the leading edge, then on the trailing edge, then flaps—all these on the wing, and then the same routine, out of curiosity, applied to the stab. Some quite surprising things occurred, a few of which would have washed out any powered model they might have been tried on. But, since I was using a small glider, all that ever happened was a nick in the wing. Think of the repairs so easily by-passed.

Some time after this I had a "B" gassie that was acting up. It just wouldn't pull out decently after the power cut. I rambled home and made a ¼ scale sheet-balsa profile glider. Body was a piece of 3/32" sheet, the wing, stab and rudder were 3/64" sheet. Surfaces were set at the same incidence as the large ship, and were also cambered to conform close to the median line of the section used on the big job. A bit of clay balanced the glider at the same relative point as its big brother.

Outside, the glider was tossed so that it followed as closely as possible the power flight path of the gassie. And, like the gassie, as soon as the glider lost speed it stalled, and stalled again, and then again, slowly damping out in an erratic way. If the wing happened to be lower on one side at the pull-out the ship would curl around and gently dive —all the way down. A little fussing with the glider, and soon it was pulling out as a good hand-launched glider should. Just a change of C.G. location and an incidence adjustment and I had it made. We scaled the changes and applied them to the gassie and it too pulled out decently after the motor cut, rolling out in the same manner as the glider. A major change had been made in the adjustment of the gas model without having to fly it to possible destruction before finding out what was wrong.

Then there was the latest Wakefield design. A number of things had been theorized, but I wanted to be more than only hopeful about their benefits *before* I built the model. Another ¼ scale profile job was made. At that time I was debating, among other things, the advisability of cathedral in the stab. The glider was made with a flat stab, at first, and the reactions noted. Then the stab was removed, the guesstimated amount of droop added, and the stab replaced. Again the tests; flat spins, circle, spiral stability, etc. Tossing the glider around for an hour or so gave a fine comparison of the flat stab vs. the cathedral version, and the drooping stab has since been used in my Wakefields. The Wakefield, after being built and flown, acted as nicely as the glider had predicted.


WING= 20 SQ. IN.
SPOILERS = 1/2 SQ.IN. EA.
45° DIVE.
45° DIVE.
SPOILER ON ONE SIDE, TOP,-GENTLE SPIRAL DIVE.
SPOILER ON ONE SIDE, BOTTOM—EXTREME SPIRAL DIVE.
GENTLE DIVE.
GENTLE SPIRAL DIVE.
ALL ABOVE SPOILERS IN LEADING EDGE POSITION.
45° DIVE.
FLOATING GLIDE-FLAP EFFECT.
ABOVE SPOILERS AT T.E.

CHECKING SPOILERS FOR DETHERMALIZER USE.
THE SIMPLE GLIDER SHOWN ABOVE MADE A FINE FLYING TEST STAND. SPOILERS WERE TRIED ON BOTH WING & STAB & NOTES TAKEN AS SHOWN AT LEFT.

(*Continued from page 63*)

the span of the wing plus the span of the stabilizer shall not exceed so much. A simple piece of string with limit knots will solve the processing pronto.

True, span alone is not an accurate measure for area. Bright boys wanting more area can simply increase the chords. But since aerodynamic efficiency falls with aspect ratio, we needn't worry too much about area if span is controlled. What sort of measurements will be set?

Our own guess is, about what the averages are now: for Half-A, 60 inches; for A, 75 inches; for B, 90 inches; etc. for wing *plus* stabilizer.

Cross-Section Requirement. Here is another old friend, abandoned in the past for similar processing troubles. Look for him to come back—also simplified. It will give two desired effects: stronger and more realistic structures, and a resistance problem which a winning model must meet by clever design and clean construction. For simple processing, all models could be required to carry a dummy occupant (similar to the PAA-Load man) which would prove the cross-section automatically. For regular free-flight the dummies could be as light as possible; for PAA-Load they would continue to be weighted as at present. In the distant future, dummies may have to be larger.

Shorter Time Limit. If there is any breeze at all, a model flying free for 10 minutes (the present limit) is going to land outside the area, and likely into trouble. It looks as though in the future the 10-minute limit will be cut—probably in half. With the increase in power loadings, wing loadings, and cross-sections, we need have little fear of top limit ties of three 5-minute flights in any one contest.

With these several features in sight, we can gain a reasonably accurate description of what the future free-flight gas model will look like and how it will fly.

To begin with, it will be heavier and stronger without much change in overall size. But fuselages will be thicker and deeper to meet cross-section requirements. The extra weight will go first into accurate mechanical timers for engines and dethermalizers; what remains will go into beefing-up structures, stronger landing gears, streamlining, and more efficient and attractive finishes. The additional weight on take-offs and added mass to be absorbed on landings will demand stronger and more accurate landing gears. Because of increased power loadings, the future models will be easier to control under full power climb; which indicates that dihedral will decrease to more modest degrees, and the whole model will appear more realistically like a moderately powered full-scale airplane.

Performance also will be more realistic. Take-offs will be more difficult—demand more skill in design, construction, and operation. Climbs will be slower, safer, and much better controlled—no more "winding in" under power. The time in climb and the time in glide will be more evenly balanced. Flying under windy conditions will be safer and easier. With the slower rate of climb, engine runs may be *increased* instead of decreased. Stalls at the end of the engine run will be less violent, and smooth transition from climb into glide will be easier to obtain. Glide speed will be faster—about equal to the speed in climb, resulting in practically a "constant speed" model. Landings in unfavorable terrain will be harder (due to heavier weight and faster glide), but to offset this, the models will be stronger and they will be more likely to land on the prepared surfaces of the flying area.

Clever designers will likely develop models that inherently glide and land into the wind—to reduce landing hazards. These models are going to fly and land where they belong—inside the established flying areas. Both the modelers and the public will be pleased. This is how, in the future, we will "keep 'em flying!"

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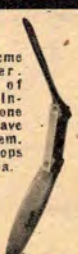

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Safety Fuse

By HAL ROTH

■ One of the greatest advances in the model world was the introduction and wide acceptance of the dethermalizer. The first models of the device were crude by today's standards. In 1941 when Dick Korda won the Original Design Event at the Scripps-Howard Junior Aviator Meet in Cleveland, he used an Austin timer to pull a tab on the rudder which caused his model to violently spin and come to earth.

Since then all sorts of devices have been tried by the ingenious model fraternity. There have been parachutes, wing spoilers, drag flaps, pop-up wings, devices to change the center of gravity of the model, one to increase the rudder area and weathervane the model into the wind, weighted spools of thread, and lastly the pop-up stabilizer.

The pop-up stabilizer is probably the best, for it is relatively foolproof, simple to make and operate, and causes the model to descend slowly. Looking back to 1941 I remember a gas model belonging to George Wetmore equipped with a large tab on the rudder actuated by an Austin timer. George's model was up in a fat thermal about two thousand feet high when the rudder tab kicked in; the model peeled off and dived while spinning with such speed that when it hit the ground there was not much left forward of the stabilizer. Yes, the pop-up tail is a great improvement!

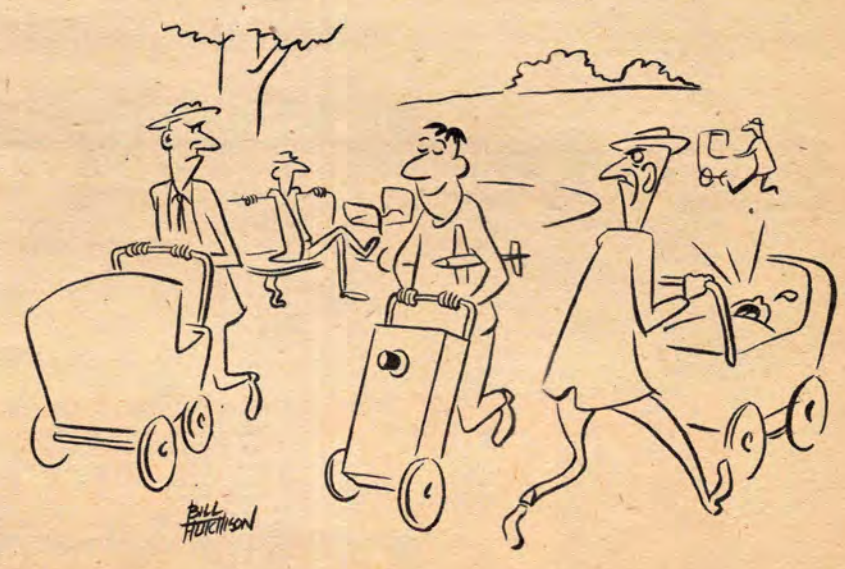
In the search to make a simpler device and one light in weight, the fuse actuator was introduced and its use is worldwide. The fuse is lightweight and reliable, but a growing concern is the fire hazard risk with fuses. The danger is especially great in the western United States where the rainfall is light and the flying fields are very dry in many sections. The possibility of fires from the fuse type DT (dethermalizer) has already caused the *complete ban of all free-flight flying* in one area during the summer months. In an effort to prevent similar actions, other groups have taken steps to rule out the fuse type DT. The beauty of the fuse arrangement, especially for lightweight gas models and Wakefield ships, has made the banning of the fuse a bitter pill to swallow for many flyers.

Larry Parsons of the Oakland Cloud Dusters Model Club has come forward with a fine idea keeping the simplicity of the fuse while eliminating the fire hazard completely. Larry suggested the use of dry ice plugs in place of lighted fuses. The arrangement for a common pop-up stabilizer type is as follows: The normal fuse set-up has two wire hooks protruding behind the stabilizer. Loop a rubber band over one hook and wrap it around the other hook and back up to the first hook. Insert a plug of dry ice between the rubber bands and then loop the end of the rubber band back over the dry ice plug. Then when the carbon dioxide plug boils away the rubber band is released and the DT is actuated. Simple! Light! Foolproof! No fires!

The dry ice plugs are cut from a block of CO_2 with a thin-walled metal tube ⅜" inside diameter. Firmly press the tube into the ice for a few seconds and withdraw the tube. The plug of ice will stick to the tube. The hand is held on the tube for a second or so; the heat from the hand causes the plug to drop out. The plug should be roughly one-half inch long. A ⅜" plug lasts 11 minutes. Four plugs were tested and actuated the DT within ten seconds of each other.

Dry ice costs 5c per pound in Oakland. We usually buy ten pounds which is ample to last a large group of flyers all day. The ice is chipped and put into a large thermos jug or small field ice box (also good for icing beverages).

The dry ice idea can undoubtedly be adapted to an almost infinite variety of model timing devices.



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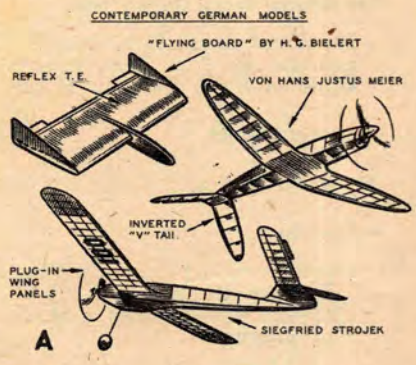
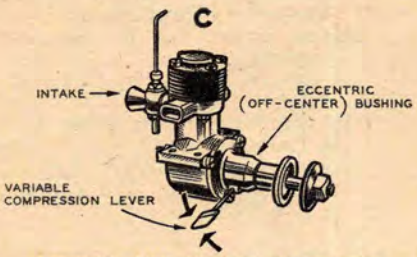
FOREIGN News-Notes

■ One of two four-engine scale control models in recent English championship meet at Wembley was large "Brabizon" having four diesels submerged in wing leading edge. Ship flew realistically as did B-17 model which performed simultaneously with FW-190 to simulate WWII combat. American Dooling engines stole show in this meet: .29 job by Pete Wright flew 124.9 while .61 ship of Fred Guest clocked 133.1 for new English



records. Britisher Ron Warring, having won rubber model national contest with single-skein rubber job, writes this column that he is switching to twin motors and gears. New geared ship attains 150 ft. greater altitude, and one minute more time.

German model interests, indicated by content of mag "Thermik," currently swing toward unorthodox types, sailplanes and radio control. Large portion of soarers are flying wings. New German glow-plug engine described is 10 c.c. Super-51

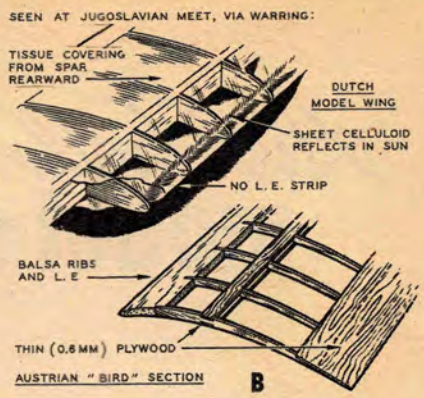


NORWEGIAN DAVID-ANDERSEN 2.5 C.C. DIESEL

Special by Bayer-Frank, said to run at 16-18,000 rpm.

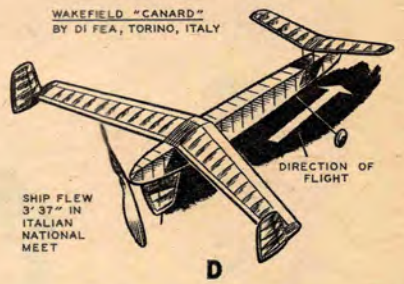
Model diesels, still popular abroad, employ variable compression as an adjustment toward optimum performance, usually via contra-piston threading downward above piston. Another method of varying compression is used in David-Andersen Norwegian diesel, *i.e.*, an eccentric crankshaft bushing. Lever turns bushing to raise or lower all rotating and reciprocating parts, thereby altering compression. One advantage is reduced overall cylinder height; a disadvantage is loss in efficiency through affected porting. David-Andersen 2.5 c.c. (equivalent to our Cl. A .19 engines) with eccentric bushing is easy starting, smooth running job, reports Model Aircraft writer P. F. G. Chinn.

Recent New Zealand records include



following noteworthy speeds and durations: payload gas, 2.55 av.; towline, 100 ft. towline, senior, 21.53; Control-line jet, 147.5; Cl. 1 (small) speed, 91.78 mph; Cl. 3 (large) speed 146.37; Cl. A F/F gas, 16.46; Cl. B F/F gas, 15.0; flying wing towline, 10.48.

Flourishing control model activities in S. Africa, reported in model news bulletin "Flypaper," include balloon bursting, streamer cutting (combat), and dogfighting. In balloon bursting, three target balloons are tethered at 10, 15 and 20 ft. heights with highest first in line of flight. Ship must take off, clear balloons for four laps, then attack lowest one first, highest last. Passes at same balloon must



be made on consecutive laps. Five-minute time limit. Streamer cutting ships carry six-ft. streamers from wing tips; a ten-ft. streamer from tail. Ships fly two at same time, all maneuvers permitted; five-minute time limit. Dog-fighting can involve as many as three models which strive to force each other down without actual contact ("down" being when ship goes below three ft. height); ten-minute time limit.

'51 Australian Nats were best ever, according to Australian Model Hobbies magazine. Staged in Adelaide by S. Australian Associated Aeromodellers, meet featured 25 events, numerous awards included growing list of perpetual trophies. Top winner was Allen King, Victoria, free flight expert. To stimulate indoor flying, cabin event may be dropped in favor of small 30 sq. in. jobs. Stunt fell off in participation while team racing and speed picked up sharply; flying scale and free flight activities increased over past year. Proving the equal to imported engines were Australian-built 2.5 c.c. Sabre, 5 c.c. Gee Bee, and M&S .29 which flew speed ship 120 mph, team racer 84 mph. Vampire '60, another Aussie engine, was runner-up at 125 mph to McCoy .60 in Victoria meet.

(Continued from page 60)

times than any one person.

That junior record holder John Wertz Jr., of Bakersfield, again proved himself the cream of his class by sweeping aside all opposition to win sweepstakes in his age bracket. Next year John will probably win as much when he steps up to the unlimited class as he has this past season, for this guy is really good. Just ask his dad about how those Zeeks fly away. He has lost several.

It was quite amazing to find that this hotbed of original designs, California, took a backseat to kits, since three out of the four first place winners all flew ships out of a box. Wally Shorts' AWOL being the only winner not kitted.

The winners of the various events were John Wertz, Jr. in Half-A with a Zeek for high time of the day, 25:50. Dan Lutz in Class A with a Zeek. Jack Oxley in Class B, a modified Sailplane. Wally Short in Class C, "AWOL." Clint Merrill in Half-A payload, a Lift Master; and Fran Uyematsu in AB payload, a modified Zeek. All in all a very busy two days well put on by the Bakersfield Gas Model Association with Francis Stewart presiding.

Taking the contests as they came, the San Diego Airliners hosted the regular team racing contest that the F.A.S.T. club usually conducts each month. This meet was well attended since the fellows descended en masse on San Diego, kind of determined to do something about stopping the winning streak which the local fellows are enjoying.

It was on this day that a very slick piece of rule enforcement took place, in a fashion which was most sporting. Some lads had been entering ships which did not quite meet the rules since the cylinder heads are supposed to be enclosed in a fuse-faired cowl. Not being one to stop a guy from flying after he had traveled 150 miles to a contest, the F.A.S.T. club had never said anything to the culprits.

Granger Williams was determined to do something about it at this meet so as to stop any future infractions. Accordingly, he built a new ship, this time of balsa, designed in such a way so as to have the head exposed but still one which could be very easily covered. After bringing up the question himself, the "C.O.", Harold Leddington advised him as to the way the rules read, so, Granger completed his conversion with a little work, practically forcing the other fellows to do likewise. We don't believe we have ever seen a perturbing question handled in such an adroit fashion. Our hats are off to you, Granger.

Taking nothing away from Granger's beautiful job of construction and finish, it seems like the fellow with the newest ship wins the beauty event—Granger won this one. With so many guys building so many good ships, judging such an event is a difficult task in itself as we soon found out.

We had been wondering for a long time just what kind of a fuel-proofer the boys were using on their team racers since in our opinion a ship of this type seems hardest on finish because of its extended engine running time during a race. The majority were found to be using Nasons Glycol, which is a synthetic lacquer. Allow plenty of time for drying, put the first coat on thin and allow it to get fairly dry before stacking on subsequent coats. Three to six coats were used by the fellows, and believe us, it is really good.

Except for Cliff Potts' amazing little speedster, the ships seemed to be very evenly matched, some fellows winning only because they started further around the circle. Cliff's ship was a good five to ten miles an hour faster than any other in the contest, clocking in at 88 mph in one 21 lap heat race. Needless to say, he was the big winner; since he managed to get his crate back in the air with a minimum of pit time each time he landed, as well as having the fastest ship, he lapped everyone several times in each race. The speed comes largely from his very light weight, we think, for his ship is as much as eight ounces lighter than other entrants. Of course, he has a good matched prop and a sweet running Mac .29. He's hot, Cliff Potts is.

The Thermal Thumbers team Wakefield contest is always a big event and this year's contest was not lacking in appeal. Off the record—there was a team from San Diego which had set its sights on winning this contest—but to no avail.

The guys from Oakland were down, the Cloudbusters, all of them with mucho ships, some new designs which Joe Foster and Manny Andrade had dreamed up after the contest in Finland. These new jobs all featured return gears and they looked pretty good. Joe Bilgri's was perhaps the

(Continued on page 71)

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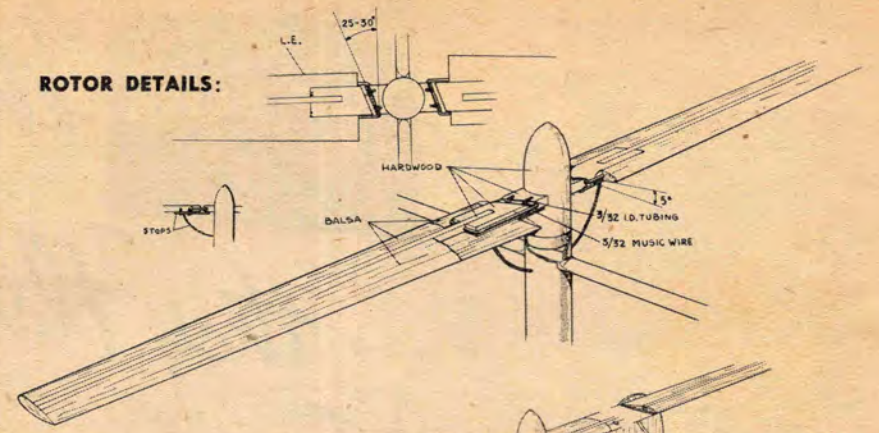
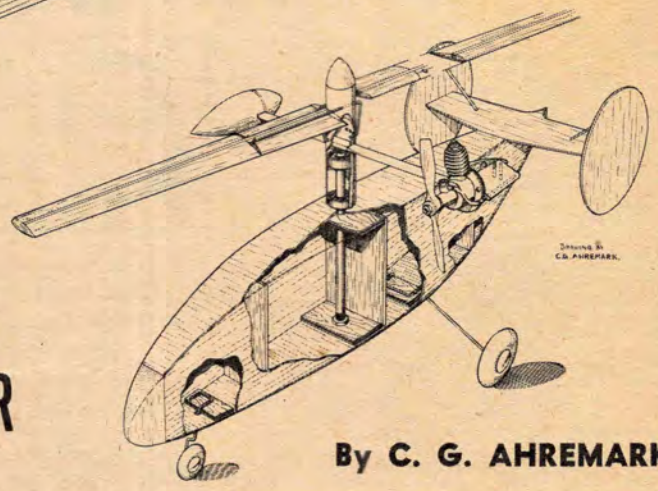


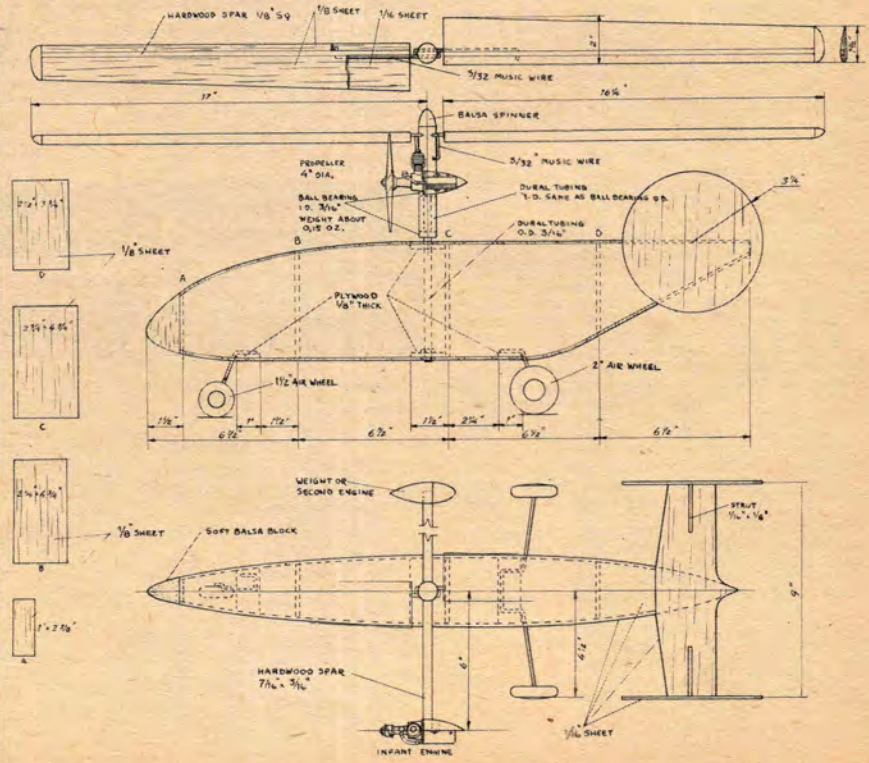


SWEDISH 'COPTER

By C. G. AHREMARK

■ One of the most interesting entries in the recent "AT" Air-Model design competition devoted to the helicopter was that submitted by Mr. Ahremark who lives in Linköping, Sweden. Because a vital drawing was missing from his material, his design did not qualify for top honors. But recently we received this additional sketch which showed an improved rotor system, hinged so the blades could autorotate during the descent. With this improvement, the design is of such merit that it is repeated in much greater detail here.

The "AT" experts who conducted the helicopter tests reported that Ahremark's machine would perform most satisfactorily as a bi-motor job, rather than as a single engine affair with an opposite "balanced" pod. Reason for this is that as fuel is consumed on a single-balanced engine set-up like that shown here, the whirling arm gets out of balance as fuel is consumed.



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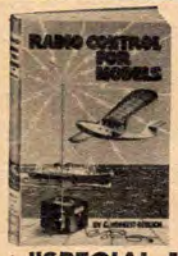
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(Continued from page 69)

best even though it was some two ounces overweight. The climb on this ship was a joy to behold, really grabbing altitude like a homesick angel. The prop run, even with the huge 24-inch prop, was kind of short, being only in the neighborhood of 90 seconds. The total upweight of over ten ounces was rather obvious in the glide since the ship was a little fast.

We did not have an opportunity to observe Manny's ship in flight under full winds since the fiber gears gave way when the stop pin was pulled, completely wrecking the fuselage. Manny's other new ship with a 24-inch prop, a direct descendant of the "Slim Jim" designs, went out on the first flight and was never found in the housing just off the field. His other ship, the job he flew in Finland, was also lost, making a total of three ships he was shy on the return trip to Oakland.

Joe Foster's gear job was also a little heavy, suffering more from testitis than anything else. All told the Oakland gang were not resting on their past laurels but were indeed plunging ahead experimenting with new designs which show great promise.

Quite a few fellows became croppers at this contest due to breaking motors, power lines and the wind. Fudo Takagi's best model was wrecked after 3:27 of his first flight because of a down wind collision with a power line. Ernie Wrisely wrecked model number two when a gust of wind lifted it on take-off. Ernie released the model but we (assisting on the right wing tip) did not, resulting in a sweep in to the right. His number one model was completely demolished the previous day when an overzealous car driver drove smack dab into the ship strewing wreckage along highway 395. We pulled what is perhaps a classic boner when we left our nose block and landing gears at home, resulting in a quick switch and patch to no avail.

Andy Faykun, who was second in last year's Wakefield eliminations, again took top honors, this time in first place, besting the tough names in West Coast Wakefielding. Andy's ship was powered for a fast climb and it really went up.

When the smoke had cleared the thermal Thumbers were in first place by over four minutes. Andy Faykun, Lo Salisbury, Ed Slobad and Bill Tharp are the new champs, winning the third Wakefield Team Championships; the Cloud Dusters were 2nd.

We engaged in a very interesting conversation with Frank Cummings regarding rubber during this contest since we had heard all kinds of rumors about Frank baking T-56 in order to age it. The rumor was confirmed. It seems as if Frank had gotten hold of some rubber for his indoor models which he suspected of being "green," so he decided to try to do something about it. He took the skein of rubber and baked it in an oven at 200 degrees for five minutes. He then tried it out and it showed a definite improvement as to breakage. Further increased time bakings at the same heat until a total of twenty-five minutes was on the skein finally brought the rubber to a pre-war breakage level. Frank does not mean to say that this is required for all T-56, but does pass it on as one experiment he made which turned out good for one batch of indoor rubber.

The San Berdoo Flying Wheels have again put on the best contest we have attended in a flying season. Phoenix staged the one which really pushed it, but in our opinion the idea of not allowing any test flights within 400 feet of the official flight area made the ultimate gesture which shoved it over. Then the idea of not allowing any club member to fly in their contest was again carried through, and believe us, this idea is top-grade in our book and really makes for that super-contest.

Hogans and Zeeks reigned supreme with a few new designs out for an airing. Denny Davis's "Beanburner" with only 600 square inches in the Dooling .29 job was quite hot. Silked wing and fuse, tissued tail, it also won the beauty event. The only reason why Denny did not place higher than third was that he picked the wrong time to fly. Our "El Cumo", a "hash" of elongated Cumulus wing and tail with a 51 inch fuse and rudder forward of the stab showed great promise.

Tommy Moffitt flew one Hogan to two high places and won sweepstakes. The fellows who flew early suffered when the weather opened up at about one o'clock and were pushed down several places in the standings.

Tommy Moffitt had the fortunate experience of the return of the Class A payload model complete which had been stolen from him at the Plymouth eliminations. Denny Davis spotted the ship through the heavy colored dope which the supposed culprit had slung on. The story the fellow told was indeed amusing, but all Tommy had to do was to strip it and recover.

—DICK EVERETT

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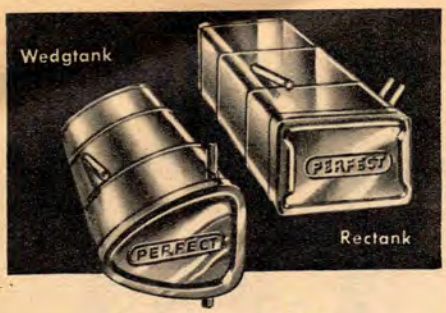

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(*Continued from page 37*)

Add nose piece and radiator sheet covering and set aside to dry thoroughly.

While the fuselage blocks are drying the supercharger housing, air scoops and exhaust manifolds can be fabricated. The first two are cut from soft balsa; however, the exhaust can be made from a length cut from a standard wooden penpoint holder. This will save you much tedious and thankless work (unless you have a lathe). The fin and rudder can also be cut from ¼" sheet balsa at this time.

Using a very sharp knife, carefully carve fuselage to correct shape, consulting the sections on the plan frequently. We use an Xacto No. 26 whittling blade for this work. When the fuselage is complete, sandpaper it thoroughly with 1/0 and follow with 3/0 sandpaper. Applying liberal quantities of cement, attach fuselage to wing. Fillet generously with a prepared compound or use a mixture of thick dope, balsa dust and a bit of talcum powder. Attach fin and be sure to offset rudder as shown. Add the supercharger and scoops.

Sand the entire model well and apply three or four heavy coats of Sanding Sealer. Sand well with 3/0 between each coat. Do not be afraid to apply more wood filler if necessary because these large models can take the weight of a super paint job.

It is advisable to apply the yellow paint first. We used a ¾" wide flat sable-hair brush and applied five thin coats to the wing, nose and tail surfaces. When this is thoroughly dry mask off these areas and brush on four coats of medium blue. This was the pre-war color of fuselages in the Army Air Corps. Let this dry overnight and then rub it to a high gloss with a soft cloth and rubbing compound of the automotive type.

Cut the canopy from heavy celluloid. Carefully slit edges of cockpit and slide the celluloid into these slits. It will form a natural curve. Apply cement. The windshield is cut to fit curved portion through the use of transition tabs which transform the curve of the canopy into the straight line of the windshield. The full-scale craft solved this problem in identical fashion. The framing is made from blue Trim-Film.

Paint exhaust manifold black or dark gray and cement in place. The insignia stars and tail stripes plus letters and numbers are cut from Trim-Film. Colors are noted on the plan. We added insignia of the 94th Pursuit Squadron to which the P-30a was attached. This can be drawn on white gummed label paper with India ink and colored in red, white and blue. This is stuck in place over the red and white Trim-Film stripe. Add the miscellaneous fuselage and wing lettering with pen and ink. Bent pins serve as hand grips on the fuselage, while white beads can be used for insulators on the antennae.

With a very sharp razor blade carefully cut away engine hatch and fuel proof the cowl interior three times. We used Tuff fuel proofer. Install engine and cut required openings in fuselage for needle valve, choke hole, etc. These holes will vary with the make of engine installed. The hatch can be held in place with large dress snaps, or use droplets of fuel-proof cement as we do. Fuel proof entire model twice.

The model can be flown successfully with a commercial three-bladed propeller (X-cell or similar); however, for stunting it is suggested that a wide-blade 11" or 12" two bladed propeller be fitted (Air-O or similar). A heavy, powerful model should be flown on .016" dia. steel lines while a slow or light job can use .014" steel lines. The length of the lines can vary from 40 feet for primary testing to over 100 feet for some real enjoyment.

We found even 80-foot lines excessive in length for some flying sites. However, this problem was solved by using a

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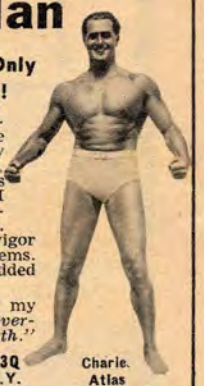

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If you are still not sold on a large model with either upright or inverted engine installation, why not build a half-size model for .09 to .19 engines or a three-quarter-size model for .19 to .29 engines? We are certain that this snappy model of one of the first all-metal cantilever wing Army pursuits will provide countless hours of building and flying enjoyment in any size!

Bill of Materials

Wing. 1 pc. ¼" x ½" x 36" hard balsa, leading edge. 1 pc. ¼" x 1" x 36" hard balsa, spar (main). 2 pcs. ¼" x ¼" x 36" hard balsa, spar (auxiliary). 1 pc. ⅛" x 3" x 36" medium balsa, ribs. 1 pc. ¾" x 3" x 10" soft balsa, tips. 6 pcs. 1/16" x 3" x 36" soft balsa, covering. 1 pc. ⅛" wire, 18" long, landing gear. 1 pc. ⅛" x 2" x 16" plywood, spar joiners.

Fuselage. 2 pcs. ¼" x 3" x 36" medium balsa, sides. 1 pc. 1" x 3" x 36" soft balsa, fairing blocks. 1 commercial type bellcrank. 1 pc. 1/16" wire, 19" long, control rod. 1 pc. 1/16" wire, 5" long, tail wheel strut. 1 pc. .016" x 4" x 10" celluloid, canopy. 2 pcs. ½" x ⅝" x 7" hardwood, engine mount. 1 pc. ½" x ⅝" x 2¼" hardwood, bellcrank mount.

Empennage. 1 pc. ¼" x 2" x 36" medium balsa, tail surfaces. 1 commercial type control horn. 1 pc. ¼" dia. x 15" dowel, elevator spar. 8 Band-Aid backing (crinoline) hinges.

Miscellaneous. Cement (Testor's Formula B), Sanding Sealer, yellow dope, blue dope, Trim-Film, Tuff fuel proofer, pins, solder, washers pen holders, wheels.

Dope Can

(*Continued from page 52*)

that would not prop-hang. I felt that the best approach would be with the thrust line above the center of gravity. At that time the only two types were a low wing model or a layout like Shulman's *Wedgie*. The former had certain stability disadvantages and the latter is quite common and also has the problem of getting the C.G. low enough without using weights placed in the bottom of the fuselage.

"I then heard that Frog was producing a model with the motor mounted on the pylon with the wing. Using this theme I developed my Do' No'. Since then I have seen pictures of the Powavan, and while there is a similarity there are several differences. The wing of the Powavan is mounted above the thrust line, but the thrust line goes through the wing on the Do'.No'. Also, the Do' No' has the prop protected by the fuselage, whereas the Powavan hasn't any such protection incorporated into it.

"The wing and tail configurations of the models differ, and according to an article in an English magazine the Powavan is complicated to build. I tried to keep my model as simple as possible. I have not seen a completed model or plans of the Powavan so I can't tell where the C.G. is placed.

"The only influence the English model had on my design was the idea of mounting the motor on the pylon. I had not seen even a picture of it so could not tell how Frog used this idea."

Schneider and his model building pals, Dale Springsted and George Fowler of the Schenectady, N. Y., Aeroneers have modified versions of the Powavan which are the result of following Charlie Grant's writings through the years. Dale put a Powavan together in '50 which had a fine glide but was sadly lacking in longitudinal and directional stability. Fowler scaled up the kit design into a 400 square incher with a .19 engine. He used a thinner section and much to everyone's surprise that made all the difference in the world.

Taking it from there (and after Fowler's job was devoured by porkers when it landed in a pig pen!) the trio developed a Class B design of 475 sq. inches with the following specifications: span, 56 inches; chord, 8.75 inches; 50% tail moment arm; 33 1/3% of wing area for stab area; 7% of wing area for fin area; wing, airfoil, Grant X-10; stab airfoil, 0.7 Clark Y. All three built the design for Class B. Fowler built another 400 sq. in. job for

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Says Schneider, "All of these ships have the same flight characteristics. Terrific climb—straight—at a steep angle. Floating flat glide that is tops. Using one wheel, as we all did, R.O.G. take-off characteristics are very bad. Very easily turns out of the wind and blows over. Incidentally, the performance was very accurately predicted by Grant."

A check of "Lochafer's" contest performance (it's name is derived from an old-time beheading axe which the fuselage resembles in side view) shows 3 important "firsts" and 4 "seconds" in big Eastern meets. In addition, John flew his Half-A copy at the last Nationals with a first flight R.O.G.'ed time of 10 minutes! On second attempt it ran into a stray tool-box which took the spirit out of it. "All in all," writes Schneider, "we have had lots of fun with this design and are planning a flock of new *Lochafers* for 1952. Watch for them!"

Indoor Meet—followed by fourteen exclamation marks! Now there is something that's few and far between these days—an indoor meet or record trials. Bill Tyler, AT's art director, informs this dept. that indoor record trials are set for either April 20 or 27 in the 150 ft. high hanger at South Weymouth, Mass. That's a Navy structure aboard a Navy Air Station. This is the same height ceiling as that at Lakehurst, N. J., NAS under which Merrick S. "Pete" Andrews turned in history's first over-30-minute flight. Indoorites and modelers who would like to see this exciting type of flying are requested to contact Ed Dolby, 157 Union St., Rockland, Mass., for more data and exact dope on dates. We hear talk of prizes and free sleeping quarters.

More Meets. That well-known little bird tells us the famous N. Y. Mirror Model Flying Fair is scheduled tentatively for the second Sunday in June. And speaking of June—June Dyer who handles the publicity for the Northern California Free Flight Council informs all interested parties that the dates for the NCFFC contests are Feb. 24 (director, Mario Bertolucci), April 27, June 1 and Sept. 21.

Two very successful years of fun and competition among the free flight clubs of Northern California and Oregon will long be remembered. A plan is underway for a club trophy (to be about 3 ft. tall) which is to be held by the club of the Council which scores the highest number of points during the year. For the past season, the San Francisco Vultures captured the high point title with 220 points.

New officers of the NCFFC are Lee Ross, pres.; Stanley Fadden, sec.; June Dyer, financial secretary and publicity chief. Mrs. Dyer can be reached at 316 Monterey St., Brisbane, Calif., for more info on Council meetings and contest sites.

One of the most active groups in the East, if not in the country, is the Bucks County, Pa., Federation of Model Airplane Clubs. The Federation lists a contest calendar as follows: May, Bristol, Pa.; Aug. 3, Waynesboro, Pa.; Sept. 1, Far Hills, N. J.; Sept. 21, Waynesboro, Pa. Additional dope on Federation meets can probably be obtained from Clarence F. Wells, 1300 Dixon Ave., Croydon, Pa.

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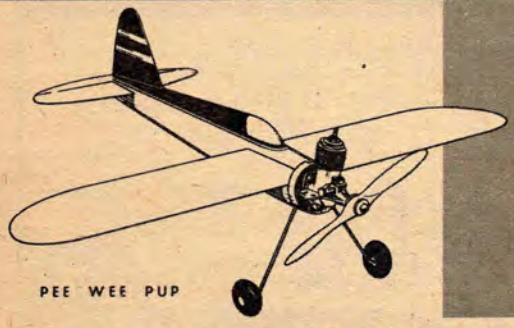
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all the good old .60 fans?" asks Robert Seaton, 1104 Adams, Fredonia, Kans. "Have the guys quit modeling? Who invented Half-A? They ought to be shot. It's the ruination of the hobby. Where can I find 16 and 18 inch props for Forster .99 engines? I have a bunch of good engines—some new—from .29 on down that I would like to swap for some good, larger engines. Would like a jet." Anybody interested in an exchange?

Plymouth International Scheduled. As you probably noted from the photo in Dope Can last month the model airplane with which Eugene Stiles, then 17, of Alameda, Calif., ended Russia's monopoly of the international model aviation scene and brought a world's record to the United States for the first time, was presented to the Smithsonian Institution and accepted by Paul Garber, curator of the National Air Museum.

The presentation was made by R. C. Somerville, general sales manager of Plymouth Motor Corp., coincident with his announcement that Plymouth would again next summer sponsor world record trials at the famed International Model Airplane Contest.

Announcement that the contest would again be held means that 500 top modelplane builders will meet in Detroit in August to shoot at some 15 remaining international records still held by flyers residing behind the Iron Curtain. The flyers in the meet, all of whom will be under 21, will be given particular help and encouragement in their record attempts.

At the presentation was Lt. Cmdr. John Burton, USN, H. B. Heberling, Plymouth's assistant general sales manager and Russ Nichols of the AMA. The 2-pound, 3-oz. plane which Somerville turned over to the Smithsonian ended the record drought for American model enthusiasts on July 20, 1949, when Stiles flew it at the Alameda, Calif., NAS, at 80.634 mph over a straight-line, 100 meter course. It broke by 14.098 mph the record held by Vladimir Davidov.

Stiles' model will be exhibited in famous company at the National Air Museum: the Wright Brothers Kitty Hawk, first powered and controlled heavier-than-air craft to carry man (1903); the Spirit of St. Louis; the Winnie Mae; the supersonic Bell X-1, first to fly faster than the speed of sound. The model will be placed near three full-scale planes, famous in air history as "firsts": the NC-4, first to fly the Atlantic (1919); the T2, first to fly the American continent non-stop (1923) and the Douglas World Cruiser, first to fly around the world (1924).

As in former years, invitations to the 6th International will be limited to 500 outstanding modelplane flyers on the basis of their performance in preliminary meets. Plymouth dealers will hold local and statewide contests prior to the International to provide an opportunity for the boys and girls of their communities to qualify.

In addition to the world record trials, the contest will present much the same line-up of events as in '51. Tentative dates for the meet are August 20 to 25.

Clubs Checking In. Aero-Nauts of Alexandria, Minn., are 67 strong according to president William O. Pickett, Jr., Box 412. They're looking for an adjustable-in-flight propeller and movie films on model aviation. Maybe some of you club cameramen would like to loan 'em your own? Greater Hartford MAC is Connecticut club interested in R/C and high performance rubber jobs. Peter F. Van Dore, 73 Blue Hills Ave., Hartford 1, Conn., can put you in touch with group. A brand-new club is

(*Continued on page* 78)

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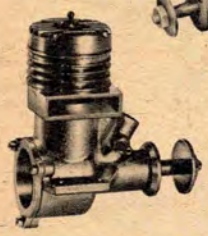

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PLASTIC BALSA

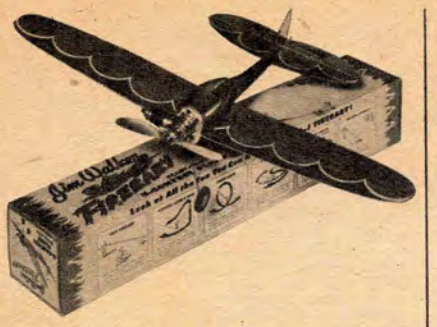
RINGMASTER

Latest creation by Matt Kania, noted Eastern designer, is the Ringmaster, a B-C class stunt model from Sterling Models. The 42 inch job is priced at $2.95, features full prefabricated parts; wing is Silkspan covered. Fuselage is die-cut and shaped. Kania has long list of successful designs.

A 1 inch to the foot model of Chris-Craft's new 21 foot Cruiser "kit boat" is announced by Dumas Products. Model follows actual large boat construction. The dry (no liquids) kit is priced at $2.95. Also coming atcha from same concern is $2.50 model in kit form of the 21 ft. Chris-Craft Sportsman.

GOOD FOR GUILLOW

We're sure glad to see someone has come out with a scale model kit of the Convair B-36 bomber for we've had many requests for same. Our congrats to folks at Paul K. Guillow's in Wakefield, Mass. New scale kits also include C-119, T-28, B-57A. Latter is Martin's version of Canberra.



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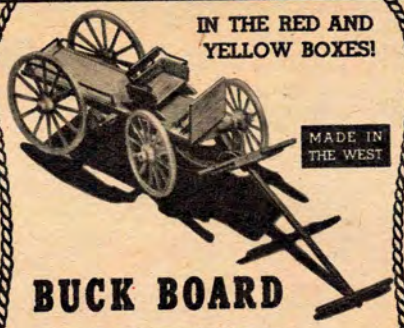

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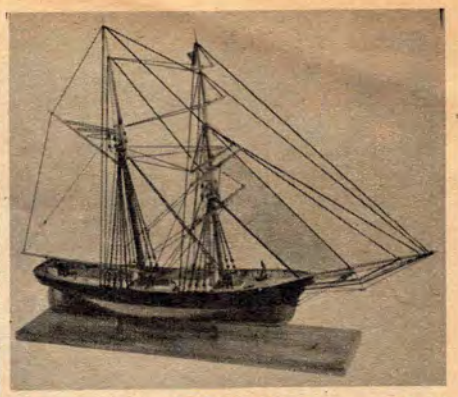

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INDIANA TECHNICAL COLLEGE
332 E. Washington Blvd., Fort Wayne 2, Ind.

(*Continued from page 75*)

operating in Pasco, Wash., under the sponsorship of the Lions Club. Group already boasts 36 members and is growing fast. Name is Lions Modelairs; they meet every Tuesday evening in the Community Center and fly every Sunday afternoon—weather permitting. A big meet is planned in the spring. President is Charles Huston, c/o County Courthouse; secretary is Gary Candee, 424 N. 9th St.

Asleep at the Switch? "I am president of the Ritchie MAC at Annapolis, Md.," fumes George L. Harting. "We have been following with much interest your coverage of team racing the past year and are beginning to wonder if the California sun is affecting your eyesight or if you think team racing is only done on the West Coast."

George's club is very small, about 10 active members and about six are deep in team racing. The others stick with scale and stunt modeling; apparently all are die-hard U/C'ers. In and around Baltimore last year they found very little team racing, but the faithful six have gone to meets in Quakertown, Carlisle and Willow Grove, Pa., and at Linden, N. J. The Ritchie MAC lads think we must be asleep at the switch for missing so many of the better T/R meets on the East Coast.

The Annapolis lads say they are willing to drive 300 miles (round trip, that is) to such places just to participate in team races sponsored by the Bucks County Model Federation and race with the fine group of fellows who run and participate in these competitions. George says that one of the finest competitors they met the past season was James Kirman of Upper Darby, Pa., who took *nine* first places in a row.

"One of our team finally upset Kirman at Linden last October at a contest conducted by Leon Shulman," relates Harting. "I had the pleasure of tangling with Kirman again at Willow Grove later on at the opening of the new field there and came off second. Bob Mastrovitch of Fords, N. J., your 5th Internationals winner, was taken by Kirman at the Quakertown contest. All these activities are going on and have been all season right here in the East, but so far your magazine has to go to the West Coast for team race news and articles. We feel you are overlooking some good bets right here!"

The Annapolis club's members are building now for next season and hope to have ready at least five new ships. Most of the Eastern winners are original designs, according to Harting. Upright engine positions seem to be the order of the day. And the proof of the pudding—*seven*-second pit stops!

Mighty Cold for May. One of the really right guys in modeling and a fellow who never stops working for the activity is Arthur J. May out Bismarck, N.D., way. Art manages to drop Dope Can a line now and then on what's cooking. Herewith his latest epistle:

"It has been a while since I wrote you anything on our club activities. The Missouri Slope Airplane Modellers Assoc. has been going great guns the last few months with some outside support. Each summer we have a contest that gets bigger every year. This meet is sponsored by the Plymouth Dealers of North Dakota and draws as big a crowd out to our municipal airport as anything else has ever done in the surrounding territory. For some reason, the people as a whole enjoy standing out in the hot sun to watch the boys fly their models.

"Jets and radio control hold great interest. Some of the spectators will always come up with suggestions as to what they would do to keep the boys going throughout the next cold spell and keep interest alive. This is appreciated, but after the contest season is over those very people forget what they said, and so we out here in the cold country must carry on by ourselves. Each year we plan a full winter's activity, and by spring the usual die-hards are still at it, with a few old builders coming around asking what's new for the summer.

"This year the local Exchange Club got hold of a building from the city of Bismarck, and the modelers insulated it, set up a stove and benches, all was and is in readiness for a good cold season of building for next flying season. However, it has petered out a little—but there are several new members that are attending regularly. We have a rule, or maybe it's a bet, that once a month or more a model will fly until the weather gets warm again. This may sound silly to some model builders in the warmer states, but when we are 30 below zero, propping an engine over is quite an ordeal—but fun, too, in a gruesome sort of way. So far this year we have been lucky. On December 2nd, the weather was nearly 50 above, no wind, and we flew from daylight to dark—incidentally this was 8 A.M. until 4:30 P.M. Both free flights and control were flown. Towards 4 P.M. one free flight hooked a next year's thermal, and a 9-minute flight was obtained on an 8-second engine run. Temp at this time was about 38 degrees. Some claim this is impossible, but we have proved this now on four occasions, with one flight of 33 minutes, 38 secs.

"Our winter plans are to get some more money donated from some source and get a class of younger members building that have not the money in their families to support the hobby. This sounds easy, but it is not an easy task out here or any place else. Once the start is obtained, it goes quite easily. We will do this: there are four older members that show up at the clubroom different nights and help what members we now have get their ships ready for next year's state meet. This is working out fine, but more members are needed. There are plenty of modelers that do not enjoy club meetings or workshop facilities. Some we would like; some we don't want at all. However, we will have a meet next July where a few proud youngsters will show what was done this winter.

"The State meet always is open to 'outside' flyers also, and the last two years we have had Canadian flyers down that gave us plenty of competition. They also taught our boys many things on proper free flight procedure and we will put that to use. Having the aspect of a little International meet goes over big with our sponsors, also giving the spectators something to talk about.

"We are not exactly in agreement on the free flight rules as currently in force. We read in Air Trails about motor run divided into total time for a way of figuring at a meet, and it went over with so much enthusiasm that it will be used at the next meet. Also the 6-minute flight limit that went with the rule. We like it. We also favor the comments on scale model flying, as this usually causes quite a lot of misunderstanding both to judges and flyers alike. We think plans are necessary, but the way the AMA rules read, some judges imagine that 3-view drawings are a must. I am sure they were never meant to be interpreted that way, when full-size plans of the ship are offered and are much easier used.

"To elaborate a little on this, judges are hard to get and to teach the rules to. Imagine them (any judge) especially some nice gentleman who never saw a slide-rule, try to scale up an off-the-beaten-path 3-view to bring it to the proportions of the model he is judging—this goes for any meet, large, small, or indifferent. It's either too much work, not worth the time, or out of the understanding of the average judge. The rule should be restated, and full-size plans accepted.

"I guess that is about all from this part of the cold world. We do hope to see something in print of us out here, as it helps us older fellows keep interest centered at the club room. Incidentally, Air Trails hit the newsstands here yesterday. Today when I went in a local drug store where I deal (had told him previously to handle AT) there wasn't one left. He had had quite a few copies yesterday, and it made me feel warm to think we have that many interested in town."

Queries. "My hobby is helicopters and only helicopters," declares Robert Tennenbaum, 15, of 461 Ft. Washington Ave., New York City 33. All Bob's friends are jet fans and are not interested in 'copters. We assume this is full-scale, big-plane stuff of which he speaks. He's looking for some 'copter fiends in his vicinity or pen pals. He'll trade plans and photos by mail. Local whirligig fanciers can call him at LO 8-0785 after 4:30 P.M.

"Where can I obtain parts for obsolete gas engines?" asks Al Martner, Jr., 190-20 109 Ave., Hollis 7, NY. Well, it all depends, Al, on what engines. Polk's at 314 5th Ave., NYC, has a considerable supply of parts for old engines according to Nat Polk. Try them. Incidentally, readers, anyone knowing of a source of engine parts for the older engines—let AT know. We'll be glad to publicize the place.

William Adams, 54 West Hopkins, Pontiac, Mich., is seeking a pen pal in England who is interested in scale models. That mention of Great Britain brings us to the announcement that flying scale models of the Hawker P.1067—one of the new swept-back wing jet fighters now in production for Britain's fighter command—were demonstrated on the R.A.F. stand at the National Schoolboys' and Senior Students' Exhibition at the Horticultural Halls in London.

Models took off and flew under their own power tethered to a pylon. Models of the Avro 707 jet-propelled delta-wing research aircraft, the Gloster Meteor interceptor, the de Havilland Vampire ground attack airplane and the Supermarine Spitfire were also flown. This exhibit was arranged by the R.A.F. M.A.A.

AIR TRAILS Hobby Shop Directory

Model Builders! Here's a listing of the nation's leading hobby shops. You'll want to file it away—and when you're in the neighborhood, drop in and browse around. They're expecting you.

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618 S. Fourth Clay 3213

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Forum

(*Continued from page* 49)

Service.

The Jim Walker Perpetual Trophy for C-D Aerobatic Stunt is held for one year by the command to which the winner is assigned. Pfc. Tommy Baker of Military Air Transport Service is the present holder of this trophy.

Replicas of the four trophies are presented to the winners for permanent possession. Individual permanent awards were made for all first three places of the various events.

A total of twelve AF commands participated in the 1951 Championships which brought 120 of the nation's top modelers to this competition.

Among these were airmen stationed in Alaska, Tripoli, Hawaii and Germany. It is anticipated that all 18 Major Air Commands will have representative teams at the '52 Championships.

Lt. Vogler has been operating model airplane contests since 1927, his first meet being an indoor one sponsored by the Junior Birdmen in the Hunt Armory in Pittsburgh, Pa. He holds AMA license No. 146. He was one of the co-founders of the International Gas Model Airplane Championships and organized the Tri-State Association of Model Airplane Clubs. He was the director of Model Aviation Activities at the Boys Club of Pittsburgh prior to the outbreak of hostilities in 1941.

Vogler went into the Air Force in 1942, was commissioned as a second lieutenant in the Air Corps in 1943, was assigned to duty at Ogden Air Depot, Hill Field, Utah. From there he went overseas to serve with the 374th Troop Carrier Group, throughout the Southwest Pacific. Returning to the States he was assigned to the Technical Training Command at Amarillo Air Force Base, Scott Air Force Base, Ill., Chanute Air Force Base, Sheppard Air Force Base, Texas, and back again to Amarillo AFB.

Amarillo Air Force Base is the newest of the Air Training Command Installations, and has been called the "model" Air Force Base of the nation. It is fitting that this station be the host base for the Air Force Model Airplane Championships of 1952.

Morton M-5 Maker . . . I believe I can answer the question of Ron B. Miller of Indianapolis. He wanted to know who makes the Morton M-5 five-cylinder engine.

The M-5 was originally produced by the Morton Bros. of Omaha, Neb., and later by Burgess Battery Co. of Chicago. It is presently being manufactured by the M-S Engineering Co., P.O. Box 192, Libertyville, Ill.

Robert L. Paugels, Rockford, Ill.

To Fire HVAR's . . . Could you inform me how the HVAR 3.5 in. rockets are fired? I've studied it a long time and can't figure it out unless it's an electric device like a flashbulb.

Thomas White, Haw River, N. C.

• The HVAR and other airborne rockets are fired electrically from the plane's cockpit. An electric spark fires the solid propellant in the rocket's motor.

Grumman F3F-2 . . . Please tell me the wingspan, length, ceiling and armament of the Grumman F3F-2 biplane fighter.

Richard Kogan, Stamford, N. Y.

• The data for the Grumman F3F-2 is as follows: span, 32 ft.; length, 23 ft. 3 in.; top speed, 270 mph; service ceiling, 32,000 ft.; armament, two machine guns firing through propeller.

Tubes for R/C . . . What advantages and drawbacks would I face building 3Q4 or JAN 9002 or 9003 tubes and what advantages and drawbacks have the RK61, XFG-1, 3A5 or 3S4 tubes?

Can you give me names of tubes best suited for model aircraft?

Can I get 4 movements (elevator & rudder) with one transmitter and one receiver but with different pulse settings?

Enrique Casta, San Isidro, Calif.

• The 3Qv and 9003 tubes might be used in small, low powered transmitters, of adequate power for most R/C purposes. The tubes you have listed—RK61, XFG-1 and 3A5 are the ones most widely used at present in radio control.

Elevator and rudder movement from a single RF channel (one transmitter and one receiver) can be had in a number of different ways. Probably the simplest is by use of a combined escapement, available in England, that provides sequence operation of any two controls desired. Another well-tried system is the use of audio tone control; here one tone each may be used for right, left, up and down. Audio tone equipment is available commercially from E. L. Rockwood, Walnut Creek, California.

Suggest you obtain book "Model Control by Radio," $1, from Radcraft Publications Inc., 25 N. Broadway, New York 7, N. Y., or from your local parts supply house.

Bullet Compression Ratio . . . What is the

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(.29 to .33 Engines)

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compression ratio of a Bullet .275 engine and what would be a suitable fuel mixture for same?

Robert Stoddard, Newport, N. H.

• We do not have a Bullet engine on hand to measure the compression ratio, but it has been listed at nine to one (9-1).

This engine should operate on average fuel mixtures with a cold glow plug. The following fuels and plugs will operate under these conditions: Arden plug—Ohlsson #2; Champion plug—Power Mist, Rever.

If you are mixing your own fuels the following mixture would be relatively cheap and would operate on average glow plugs: two parts oil, five parts alcohol, one part nitro methane. Add two per cent amyl acetate to keep the engine clean.

Performance Data . . . I would like to have performance data on the Douglas Skyray and the Chance Vought Pirate.

Michael Moore, Detroit, Ore.

• Sorry, no information on the performance of the Douglas Skyray or Chance Vought Pirate has been released.

Sailplane . . . I would like to find out the prices for a sailplane of about 200 lbs. and the nearest club. Would you please inform me on the best lightweight kits?

John Boone, Detroit, Mich.

• We do not know of any glider kits available at the present time. If you are interested in building an excellent licensable glider from plans, we recommend the Midwest Utility Company. Write to Mr. Arthur B. Schultz, 4741 Lawn Avenue, Western Springs, Illinois.

For information on glider clubs in your vicinity contact Detroit Glider Council, c/o Dr. Zbikowski, 5021 Eugene Street, Dearborn, Michigan.

Fuel . . . I have recently bought an Ohlsson .60 Special engine. The instructions state that Ohlsson #1 fuel only should be used. This fuel sells for over two dollars a pint up here in Canada. Now what do you think of my using SAE 70 Golden Shell Motor Oil (made by Shell Oil Co.) and white gasoline or clear naphtha? The latter, as I read in your magazine, is not "high-test" but can be used. "High-test" is not available anyway, in this community. But the point is, would you consider Shell Oil to be a first quality safe oil to use in the "60"?

As you know the "60" has a specified speed of 7,000 rpm's. With a propeller of 10" or 11" diameter with 8" or 10" pitch I doubt if this engine would "freeze" using ordinary #70. I would sooner use a 10" pitch prop for reasons apparent.

But again, if you could recommend Shell 70 SAE, or if not, another make available in Canada and the use of naphtha, I would appreciate it.

J. A. W. Robertson,
St. Andrews, East, Canada

• Your problem can be answered quite easily. Ohlsson #1 fuel is recommended for your engine by the engine manufacturer who also makes that fuel. Modelers have operated these engines on gasoline and #70 motor oil with very good results. If possible get gasoline that contains no tetraethyl lead. The Ohlsson .60 is a high-compression engine and does not require high-test fuel. A mixture of naphtha and benzol would also serve as a fuel if the materials are available, but gasoline has more volatile materials and should be easier starting in a cold climate.

The only problem concerning motor oil is carbon and gum forming on the engine due to high temperature. Try whatever oils are available and use whichever one runs cleanest. Gum formation can be reduced if it becomes a problem by adding five percent of one of the following materials which should be available from a large paint store or lacquer factory: acetone, amyl acetate, ethyl acetate. Amyl acetate has the least effect on a model airplane finish.

Why "TBM" Avenger? . . . While thumbing through a back issue of your mag, I noticed what seems to be a designation discrepancy. There was a picture of the Navy's Avenger, and in the caption it was listed as the "TBM Avenger."

Now, the Avenger was designed and built by Grumman. If so, that should make the designation TBF. The TB for torpedo bomber, and the F for the manufacturer, Grumman. Unless I am mistaken, M is for Martin.

George Kilishek, Dunellen, N. J.

• A great majority of Grumman Avengers were built by General Motors at West Trenton, New Jersey, and to differentiate them from the Grumman-built Avengers they were given the designation of TBM.

Last Model of B-17 . . . I am making a B-17

model plane and would like to know if the B-17G was the last model.

John M. Bugary, Carlsbad, Calif.

• Yes, the B-17G was the last service model.

Leaning Out . . . I wonder if you could settle a couple of arguments between myself and two of the fellows that work in the same place I do.

The first is on what makes a model engine "lean out" in flight. I say it is caused by the extra amount of air being forced into the intake. They say it is caused by the action of centrifugal force forcing the gas up into the engine.

The other argument concerns the reason for a model engine slowing down on a quick vertical climb. We can see where an extra load is put on the motor but one of the other fellows can't see why it wouldn't slow down the same amount when the plane is held on the ground. We have tried to explain it this way: When the plane is flying, the engine pulls against the plane's drag, and the wings do the supporting. In a climb, the engine pulls against the drag as well as lifting the weight of the plane, thus slowing down the engine. On the ground, the engine is not doing anything but pulling against the holder's hand. There is no drag or anything to slow it down. Is this explanation correct or is it caused by something else?

Bob Kimmi, Venton, Iowa

• The engine leans out because of air being rammed into the intake during flight.

The engine may slow down during quick vertical climbs for various reasons: 1. Because engine is too lean. 2. Engine load may reach peak hp rating and lay down much the same as a car does on a steep hill. 3. Gas may be vibrated away from the intake line.

In a good climb the ship should climb on the wing as well as the prop at about a 60 deg. angle. This results in the fastest climb obtainable. There is hardly any comparison that can be made between static thrust like holding ship in your hand and dynamic thrust like in flight. Quite often engines will speed up in flight due to this dynamic thrust.

Black Invaders . . . I live near Langley A.F.B. and there are some airplanes resembling the Douglas B-26 Invader except they are black instead of silver. Could you tell me what the designation is and the insignia of that particular squadron?

B. E. Allen, Jr., Newport News, Va.

• The airplanes are probably B-26 night Intruders.

Soaring Club . . . I would like to know if you could send me information on sailplanes. I would like to start a sailplane club.

Patrick Hart, Gooding, Idaho

• Regarding information on soaring planes, write to the Soaring Society of America, P.O. Box 71, Elmira, N.Y.

Speed of WW II Planes . . . What is the maximum speed of the C-47 of WW II?

When did the P-38 first fly, and when did it hit 500 mph? Under what conditions did it hit 500 mph?

Cpl. Stephen Dunphey, USAF

• Maximum speed of the C-47 is around 200 mph. The Lockheed XP-38 first flew in 1937. We do not know when it hit 500 mph. Its normal top speed was around 415 mph.

Best Bomber of WW II . . . A friend and I were fussing about which was the best bomber of World War II. He says the North American B-25 was best and that they used them in Korea more than the B-29. I say that the B-29 was best and they were not using the B-25 at all in Korea. Please settle this.

I would also like to know how the 20-mm cannon in planes are fed and also their rate of fire.

Eugene Nelson, Ft. Myers, Fla.

• You cannot compare the B-25 with the B-29. The B-25 was a tactical airplane while the B-29 is a strategic weapon, though in Korea the Superforts were used on several occasions for tactical missions such as bombing bridges and troop concentration. Although a few B-25's are in Korea, the main light bomber there is the Douglas B-26 Invader.

20-mm ammunition is fed to the gun by means of belt or magazine.

PHOTO CREDIT LIST

Page 22—Flight Magazine. Page 23—Albert Rosse. Page 25—GA5: British Information Service; Fletcher: Hans Groenhoff; Chipmunk: Warren D. Shipp.

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MIGHTY MIDGET	59¢	"PAYLOADER" WITH 5/8 OZ. LOAD	:28.0 SEC.

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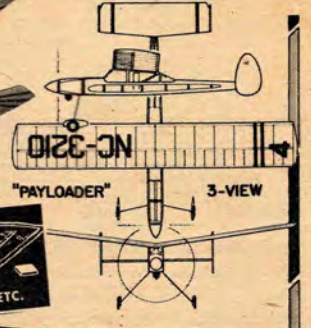

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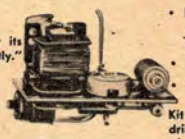
- Operates on 27.255 mc.
- Completely portable—Self contained—No separate antenna—No external Batteries!
- Weighs 3.5 lbs. complete!

Kit includes all necessary parts (except tube and batteries): Precision Ground Crystal; Painted Metal Cabinet; Finished Sectional Antenna; stamped and formed chassis with all holes punched; all necessary components, resistors, condensers, coils and chokes; color coded wiring. Can be assembled in less than two hours. Complete building and operating instructions are included —

Kit — **$21.95***



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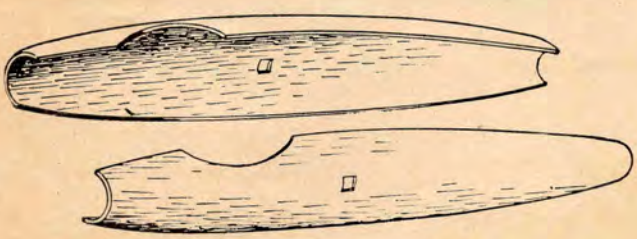

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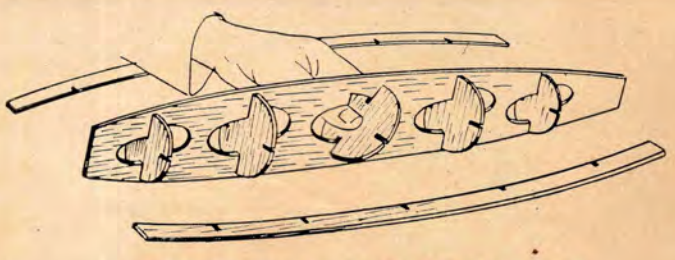

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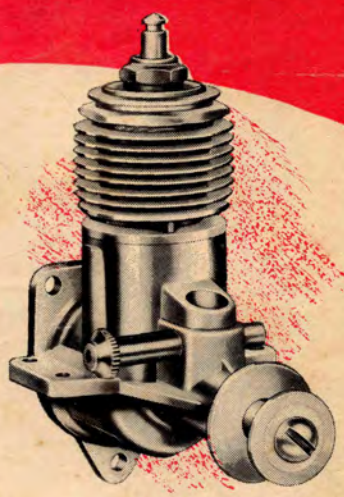

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